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ORIGINAL ARTICLES

GOITER; ITS SURGICAL TREATMENT BASED ON FOUR HUNDRED AND SEVENTY-FIVE CASES.*

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The thyroid gland shows very early in the development of the embryo. It is formed from three areas or buds, two lateral and one median. The median bud develops between the two halves of the tongue, and invaginates, extending down the neck as a tube—the thyro-glossal duct. The fifth week the developing hyoid bone crosses the line of the duct. The upper portion obliterates, leaving an opening at the back of the tongue—the foramen cecum. The lower portion forms the upper poles, isthmus and also pyramidal lobe, when it is present. The seventh week sees the portions united with the lower poles which develop from lateral buds in the fourth branchial cleft. At times the median portion does not descend, but remains in the tongue, developing a tumor known as a lingual thyroid. In the vertebrates the union of the various sections of the thyroid does not occur, and this, to some extent, is not an infrequent anomaly in man.

The united gland is somewhat the shape of a horseshoe, the concave border being up. It rests upon the front and sides of the trachea, to which it is firmly attached. The thyroid is inclosed by a fibrous capsule, which also aids in fixing the organ to the thyroid cartilage and tracheal rings. The capsule which covers the gland divides behind in such a manner that it not only covers the gland posteriorly, but also passes behind the esophagus between esophagus and trachea, to unite with similar structures upon the opposite side. With such encapsulation we can readily see how the growth of the gland or the development of tumors within its tissue may cause serious pressure and distortion of the structures in immediate relation to it. The weight of the gland in the healthy adult is from one to one and a half ounces.

*Address in Surgery Delivered at the Fifty-seventh Annual Session of the Illinois State Medical Society, May 21-23, 1907.

Accessory thyroids are also seen at times in the lines of the original areas of development. The thymus gland is formed from buds in the third branchial groove and passes downward in development to rest beneath the sternal notch.

The parathyroids discovered by Sandstrom in 1880 were supposed to be accessory thyroids until 1897, when it was shown that they were most important structures, having a separate function from the thyroid and seemingly to control to a great extent the nervous system. In later life they are apparently more important than the thyroid, as their removal causes death from tetany. The loss of the thyroid can be, to a great extent, supplied by feeding the gland, but feeding parathyroid is not as successful for tetany.

The function of the thyroid is a complex one. Among the various functions of the gland are its dilating effects upon the capillaries. In overdoses the metabolism of the body is affected by causing a loss of weight. In the obese it is a remedy to reduce overweight. Overdosage causes warmth of the skin, redness and excessive sweating. Tachycardia is developed also from overfeeding of the gland secretion, one cause being from the large proportion of blood in the capillaries.

Hypothyroidism or loss of function of the gland, the opposite condition from hyperthyroidism as occurring in exophthalmic goiter, we see in myxedema, in which the opposite conditions also prevail; harsh, dry, thick skin with open pores, development of fatty deposits in pads over shoulders and clavicles, broadening and change of facial condition. General dulness or sluggishness of intellect and increase of weight is common.

A child born without a healthy thyroid fails to properly develop either mentally or physically. The secretion of the suprarenal capsule apparently serves to constrict all capillary growth and supply to the brain cortex, as well as the rest of the body. Such cretins often make wonderful progress from the transplanting of the thyroid tissue or from feeding the same.

The thyroglobulin of the thyroid is not destroyed by gastric juice or even by boiling in 10 per cent. sulphuric acid solution.

Simple goiter or thyrocele is a most common occurrence in girls at puberty. The development is seldom excessive and usually subsides without treatment unless there be an encapsulated growth in the gland which becomes manifest from the increased circulation. These cases without an encapsulated tumor rarely require treatment and usually are of but a few months' or years' duration at most.

The second period of the development of goiter is during pregnancy. In fact, the enlargement of the gland is one of the favorable signs of pregnancy. Lange has shown that if the gland is not enlarged in the pregnant woman she will have a tendency to albuminuria. This connection of the thyroid with the generative organs in the female is well marked, as diseased conditions of the generative organs are out of proportion common to those possessing goiter, while it is most common for

women to have a temporary enlargement just previous to or during menstruation.

Hemorrhage.—Some cases of sudden development of thyroid tumors, accompanied by great pressure and suffocating symptoms, are due to hemorrhage into the gland. Early incision is required.

Septic conditions affecting the thyroid are not common, but the pneumococcus is one of the more common organisms found and is transmitted by the blood stream. Early free incision is demanded for relief. Still less common are seen tuberculosis, actinomycosis or hydatid infection.

Those thyroids which present small nodules or median smooth and rounded tumors, or in which the natural contour of the gland is lost in the development of the rounded tumor, are practically always encapsulated tumors of fetal origin, or fetal rest tumors of embryonic thyroid tissue, or adenoma, some with cystic change.

Those goiters which develop more in accordance with the normal shape of the gland are more commonly known as diffused colloid, or diffuse adenomata, while those with larger retention, accumulations of colloid with irregular contour are often called follicular goiter, the only capsule being that of the gland.

We employ the term hyperthyroidism because it expresses the true conditions far better than the terms more commonly used, viz., Graves' disease, Basedow's disease, Parry's disease, or exophthalmic goiter. To those of us who have been for many years on the firing line, so to speak, of the surgical side of this subject it is extremely gratifying finally to see the disease placed upon a scientific basis of cause and effect.

For many years the varieties of treatment, or the remedies used for Graves' disease, were only exceeded in number by the numbers in use as cures for tic douloureux. These methods were rarely based upon other than empirical statements that they seemed good for or that they improved an individual case or two. The more recent attempts at relief by serum therapy appear to be based upon good reasoning, and when properly employed have in selected cases given satisfactory results.

In the past the operative treatment of goiters in general had been placed under a ban. It was considered an operation to be undertaken only under dire necessity, and naturally a last resort operation was accompanied by a high mortality. The main points impressed upon students were the reasons for not operating, and the patients were also informed that some hideous skin disease might follow or of a surety that they would become "foolish" should the goiter be removed and they survive the operation. Under these circumstances surgical treatment was advised only for patients who were exhausted by their disease or by the treatment they had received, and thus surgical aid was given only to those cases who persisted in failing in spite of all methods of treatment. Very often moribund cases were operated upon as a dernier ressort, and as usual in the progress of medicine, failures of this kind result either in abandonment or development of methods, improvements in diagnosis, choice of and preparation of patients, until to-day we have

presented to us in a large series of cases the wonderfully low mortality of 2 or 3 per cent., and all cases relieved and most of them cured.

The statistics of the Kochers (who have long led the world in goiter surgery) report some 250 cases of hyperthyroidism surgically treated. Other operators present a large number of cases, though smaller than the Kochers, and in considering these statistics I say again that it is extremely gratifying to know that we have accepted the fact that there is a similar change in the thyroid, either in part or in the whole of the gland in hyperthyroidism. Practically it is a "work" hypertrophy and can not be distinguished from such condition when experimentally produced.

We have to consider four types of the disease, three regular and one pseudo.

First, the soft vascular pulsating thyroid with symptoms of hyperthyroidism.

Second, the hard, dry gland of hyperthyroidism, or usual type.

Third, the development of hyperthyroidism in those with pre-existing goiter in whom we find the changes of solid tissue, loss of colloid and vesicles filled with collumnar and cuboidal cells in scattered areas, instead of a general change in the gland as in the first two types.

Fourth, pseudo hyperthyroidism in which we have those who by reason of the growth of an encapsulated adenoma in the gland suffer from excessive absorption of their own gland, which occurs at irregular intervals. Such cases may suffer from all the ordinary changes of hyperthyroidism for short periods, but they seldom develop exophthalmus.

The last-named variety is often overlooked in securing histories of goiterous individuals. Inasmuch as many cases of hyperthyroidism recover without treatment and others in spite of treatment, it is perfectly justifiable for physicians to institute treatment on any line, plan or system which they believe proper. The mistake in the past has been to persist in the belief that some particular drug or treatment would eventually be successful, in spite of the downward progress of the patient, thus withholding surgical aid until, of necessity, the surgical mortality represents also in part what should properly be medical. On the other hand, the surgeon should not accept cases for operation until all the conditions are as favorable as possible for the recovery of the patient. One of the great dangers of the operation is from myocardjal change, usually shown by uneven tension and irregularity in the pulse. No patient should be operated upon whose pulse can not be counted continuously because of uneven tension. Gastric crisis or diarrhea should also lead to postponement of operation. Ascites and edema of feet and hands are contraindications. All of the foregoing contraindications may, by suitable treatment, be overcome. The Kochers, in these cases, ligate one or more vessels of supply (under cocain), according to the case, reserving extirpation of the gland for a later period.

We have used belladonna extract with quinin internally, and in certain cases the *x*-ray is applied over the gland for as many times as is sufficient to discolor or even burn the skin. This treatment is given until

the general condition improves and the operation is considered safe. The improvement under Roentgen ray may be most marked for a time, but is seldom a lasting one.

The anesthetic of choice is ether. Very rarely, indeed, do we find it necessary to use cocain. The etherization is preceded 20 to 30 minutes by a hypodermic of 1/6 grain of morphia to allay the nervous restlessness and lessen the necessity for profound anesthesia. With the morphia is given 1/120 of a grain atropin to relieve the tracheal mucus which may come from ether as well as the tracheal trauma.

The patient is placed in the reverse Trendelenberg posture, which by gravity tends to relieve the upper portion of the body of blood. The incision is the transverse, or collar, and includes skin and platysma myoid muscle. The dissection of these structures held together is carried down to the sternum and up to the top of the thyroid cartilage, the sternohyoid and thyroid muscles are separated in the midline to expose the gland. This separation may be sufficient in small tumors to permit the delivery of the gland, but often it will be necessary to cut across the group on the side removed to secure a safe working field. They are incised near the upper insertion so as to avoid injury to their nerve supply, and resutured at the close of the operation. This also breaks the continuous penetrating scar. The posterior capsule of the gland is brushed back with gauze as the gland is elevated. The superior thyroid artery is clamped and ligated as the upper pole is delivered, the inferior thyroid artery is ligated as it enters the gland through the capsule. At times this artery may be ligated further out if seen in the dissection.

Preserving the posterior capsule tends to prevent injury to the parathyroids which rest behind the intimate capsule of the gland, the injury or removal of which we know may cause tetany. This also preserves the recurrent laryngeal nerve. In several hundred operations for goiter we have seen but one very mild case of tetany of a temporary nature following this method of procedure. Great care must be exercised in ligating the superior thyroid, as a considerable proportion of deaths following an apparently successful operation are from hemorrhage. This hemorrhage is usually due to the including of some fibers of the omohyoid muscle in the ligature, which may be dislodged with movements of the neck. The isthmus is ligated, the wound area burned with carbolic acid and alcohol neutralization, or washed with Harrington's No. 9 solution, followed by free drainage through separate incision.

Harrington's solution:

	Parts.
Alcohol	640
Water	300
Hydrochloric acid	60
Bichlorid	8

The patients are given freely large saline enemata under slight pressure. If not retained they are given saline subcutaneously. This is repeated several times within the first 36 hours. Should excessive sweating occur, atropin is administered. If there is considerable serous discharge, hot boric acid dressings are applied over the front of the neck. The

drains are left from 2 to 4 days, according to their apparent utility. The deaths which occur will usually be within 20 hours.

The general nervous restlessness and tremor subsides to a remarkable degree within two days. The pulse may remain from 120 to 170 for two days, but drop suddenly on the third day about 20 to 30 beats, and is usually 80 or 110 beats within six days. The temperature may be elevated 2 to 5 degrees for two days following operation, when it drops with the pulse.

If exophthalmus is marked, it will not entirely disappear after operation, but will be greatly improved. Many cases only partially relieved of their symptoms are in no sense a discredit to the surgery, but merely show that not sufficient gland has been removed. These cases should be reoperated and more of the gland extirpated. We are greatly pleased with the result in four cases where this was done.

After operation these patients are seldom confined to the bed more than three days, and are commonly out of the hospital within a week. Practically all cases are improved over their former condition, and most of them cured. The mortality is constantly decreasing. There were 4 deaths in the first 16 cases, 3 in the next 30. We have made the last 150 operations with 2 deaths.

In operating upon encapsulated tumors in the thyroid, we have the work well outlined for us by the conditions present. An encapsulated tumor of the gland is not supplying the system with thyroid secretions; therefore, its removal is an advantage to the system in preventing the destruction of real thyroid. The more nearly the surgeon can enucleate the growth without destroying or removing the thyroid the more surely will there be only favorable results following the operation. Even enormous cysts should be enucleated, preserving what little thyroid there may still be in the capsule. Unless these tumors are very large and much traumatic serum is expected, drainage is not necessary.

Sarcoma and cancer are most serious changes to occur in the gland. Such conditions are usually operated too late to give other than a high mortality and but few permanent cures. While the tracheal pressure is lateral in benign growths, we have noticed that it is the anterior rings which are softened by malignancy.

The mortality from thyroidectomy in benign tumors is very low, practically being accidental, as from pneumonia, hemorrhage or sepsis.

INDICATIONS FOR, THE TECHNIC OF AND RESULTS IN SURGERY OF THE PERIPHERAL NERVE.*

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With the hope of placing the surgery of the peripheral nerves and spinal cord on a substantial basis and having some guide for operative procedure, we have endeavored to determine what cases were and what cases were not operable in taking up this line of work.

* Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

In order to have the indications for surgical procedures clear, and that we may know the basis on which these are founded, it will be necessary for us to go into some elementary matters in connection with the nervous system, and I trust you will pardon that portion of the paper.

The first question is, After the division of the nerve, what occurs to the peripheral portion? What occurs to the proximal portion? What are the possibilities of regeneration in the peripheral portion and in the proximal portion? And what are the probabilities of restoration of function of that nerve? In order to answer these questions we must go back to the histology of the nerve unit, which is known as the neuron, and all surgical procedures and all surgical results, as well as those from internal treatment, are based on the neuron. The neuron theory, as the unit of the nervous system (although it is not accepted by many authorities), is particularly applicable to the practical surgical side of this question.

The neuron or unit is made up of the cell body of an axon, of dendrites and of telodendrons. In the center of the cell body is the nucleus. Separate any portion of the neuron from the nucleus, the distal part always degenerates, no matter if that separation is instantaneous and is reapproximated. Under favorable conditions regeneration is possible in certain peripheral nerves and in portions of the spinal cord.

In order to appreciate what set of nerves, therefore, is capable of regeneration, we must ask ourselves, What are the conditions of regeneration? The axon, which is an elongation of the neuron, is made up of three portions, namely, the neurilemma with its lining cells, the medullary sheath and the axis cylinder. The axis-cylinder is the central conducting portion and is continuous from the cell body to the most distal portion of the nerve, in fact, projects beyond all of the other sheaths into the tissue cells. It is the conducting cylinder of the nerve. It is a part of a cell, and when separated from the center or cell body the distal portion always dies. The medullary sheath is present in practically all the peripheral nerves except the sympathetic, and we believe, although that is not definitely settled, that it is the insulating sheath of the nerve. It possibly has something to do with the transmission of nutrition to the axis-cylinder from the neurilemma, and plays a most important rôle in the surgery of the nerve, and its insulation accounts for many of the failures that have resulted from nerve union. The neurilemma, which is the outer, is the regenerative sheath of the nerve. An axon without a neurilemma, whether it be in the cerebrum, whether it be in the spinal cord, or whether it be in the peripheral nerves, is never capable of regeneration. Therefore, when we come to the surgical aspect of this subject, the most important question is, Has the nerve a neurilemma? If it has no neurilemma you are through, from a surgical standpoint. If it has a neurilemma, then it is capable of regeneration; it is capable of having its function restored under favorable conditions.

In our anatomy of the nerves we do not classify them as formerly but in the order of their reproductive or regenerative power. On this chart (pointing to the chart) we have classified nerves into those that

are neurilemmic and those that are aneurilemmic. You will see that the neurilemmic nerves are those of the spinal cord, and all of the cranial nerves, except the nerves of special sense. If we take the anterior cornu of gray matter and follow it up, we will find it passes on through the medulla, spreads out on the floor of the fourth ventricle and up in the under portion of the pons itself clear to the upper portion of the third cranial nerve; it is one continuous row of motor ganglionic cells. These ganglionic cells in the anterior cornu of gray matter in the cord, and in

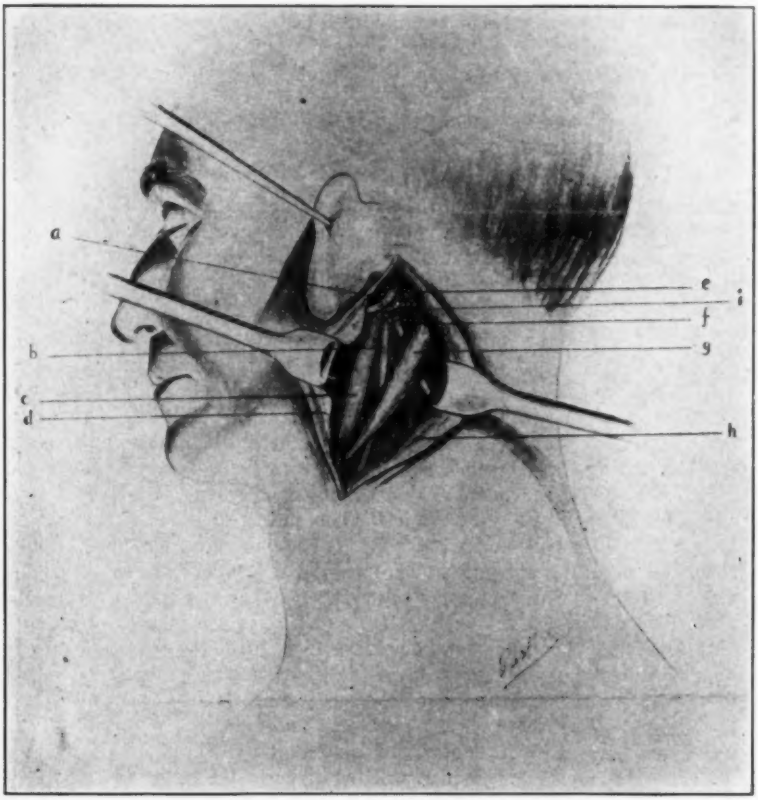

Figure showing anastomosis between spinal accessory and facial nerve. *a*, End-to-end anastomosis between facial and spinal accessory. *b*. Hypoglossal nerve. *c*. Stylohyoideus muscle. *d*. Parotid gland. *e*. Central end of facial nerve. *f*. Peripheral end of spinal accessory. *g*. Posterior belly of digastric muscle. *h*. Muscle. *i*. Outline of transverse process. (Original drawing from a dissection.)

its continuation on up through the medulla and into the pons, are the trophic cell bodies of all of the motor nerves. As they pass out of the spinal cord, and out of the medulla and pons, they all receive a neurilemma. Therefore, all of the motor cranial nerves are capable of regeneration under favorable conditions.

As to the nerves of special sense, the optic nerve, which is the most conspicuous, has its ganglionic cell body not in the medulla, the pons or in the brain, but in the retina, and its axons run from the retinal ganglionic cell body back to the brain. Its axons have no neurilemma. When it is divided in any part of its course it has no power of regeneration. This clinical fact was observed in my early practice. A young man was in the act of sliding from a haymow when a pitchfork passed under his zygoma, up to the optic foramen, cutting off his optic nerve. I believed from the fact that the divided ends were in contact and as there was no infection, that there would be a reunion of the nerve and regeneration, and so I expressed myself to the people. I did not know at that time that the optic nerve was a non-neurilemmic axonal nerve, entirely incapable of regeneration once it was divided, no matter how accurately the nerve ends were approximated. The subsequent course of the case showed that there was not the slightest effort at regeneration and not the least return of vision.

Again, we have the classification of sensory nerves into those in the cranium and the spinal cord; they are, from a surgical standpoint, practically the same. We have a ganglion on the posterior nerve root and on the trifacial within the cranium; in these ganglia the trophic cell body is placed that furnishes the axon to the peripheral portion and furnishes additional axons from the posterior root into the posterior column and up through all the sensory fasciculi on that side. Therefore, in the matter of motion we have a nutrient cell body in the anterior cornu of gray matter; in the sensory nerves we have the nutrient cell body which supplies that portion of the nerve unit in the ganglion on the posterior root. These sensory axons, after they leave the surface of the ganglionic cells and pass out, receive a medullary sheath and neurilemma; they also are capable of regeneration when they are divided distal to the ganglion. When they are divided proximal to the ganglion, i. e., between the ganglion and the cord, ascending degeneration takes place. While the axon has a neurilemma until it enters the posterior commissure, when it passes into this it loses its neurilemma and then ascending through the posterior columns (of Goll and Burdach) it has no neurilemma and is incapable of regeneration. Fortunately, through its dendrites which establish contact with other cell bodies in the posterior root, we have some transmission of sensation after division. The potency of regeneration of a nerve trunk after division is in direct ratio to the size of its ganglion. This is what concerns us so much in the regeneration of the trifacial nerve. The trifacial nerve is, to all intents and purposes, a special nerve, but its ganglion, namely, the Gasserian, in place of being situated outside the spinal foramen, is situated inside the cranial foramina, partially within and partially without the dura. As it is a ganglion of great size, you can conclude at once that its nerve trunk has great potency of regeneration, which fact is supported by overwhelming clinical evidence. If we make a division of the nerve in any portion of the trunk, after a short period of time regeneration will take place, even as soon as eight or ten weeks; if we allow immediate contact of the divided

ends there will be a re-establishment of sensation in the face on the side on which the nerve has been divided. For a long time we were taught that the disease or lesion concerned in trifacial neuralgia was of ganglionic origin, and the microscope was brought to the assistance of those who claimed it was a central lesion. It was said that trifacial neuralgia recurred after the division of this nerve, and, therefore, the lesion must be central. It has not recurred in a single case that has come under our observation until there was re-establishment of union between the peripheral sensitive nerve bulbs and the central axon. That gives us the keynote to the treatment, and Abbe and others have taken advantage of it in the surgical treatment by interposing inabsorbable and impenetrable material between the ends of the divided roots or axons. On that

Facial paralysis, operated June 30, 1906.

basis various means have been employed to prevent the re-establishment of this union, namely, large tracts of the nerve have been removed, which, in any other nerve in the body having a smaller ganglion, would have resulted in a permanent obliteration of sensation in that tract, but on account of the enormous regenerative power of the trifacial through its large ganglion we have a re-establishment of union even after the roots have been removed. In the destruction of the nerve trunk by chemicals, as iodin, nitric and osmic acid injections, primary neurosis and a large connective tissue deposit are produced. While axons find great difficulty in penetrating connective tissues, we have noted with the destruction of inches of this nerve by these chemicals that finally the axons penetrate the mass and there is a re-establishment of sensation in the face; within a few weeks, as reported by the patients, the neuralgias would return.

We have found in the ordinary spinal cord nerve that the interposition of one-quarter or one-eighth of an inch of connective tissue was sufficient to prevent the re-establishment of union. Therefore, in the surgery of trifacial neuralgia, me must, if we hope to bring about a permanent cure, interpose some material that cannot be penetrated by the axons as they elongate from the proximal side and have great penetrating force.

Abbe was the first to take advantage of this and suggested the interposition of gutta percha, which is good for that purpose if it will remain in place. A simpler method, however, of effecting a permanent cure of trifacial neuralgia is to make an osteoplastic flap, as indicated in the Hartley-Krause operation, but smaller in size. Through a U-shaped incision just about three-quarters of an inch above the zygoma, remove the bone with a rongeur, as there is a muscular flap to subsequently cover the opening. With a tongue depressor and finger elevate the dura until the foramens ovale and rotundum are exposed, hook or seize the nerve, draw it even out of the foramen and excise the exposed portion, push the ends back through the foramina; then slip a coal-tar paraffin disc eliptical in shape and as thick as a nickel, between the dura and the bone over the openings. Press the disc of paraffin firmly, thereby forcing pivots of it into the foramina; this prevents the paraffin from sliding out of position. It has no particular advantage over gutta percha, so far as penetration is concerned. After it is deposited it does not slide, the dura rests upon it and it is a permanent barrier against axonal penetration. So much for the important and practical points in connection with this nerve of sensation, which concerns us so much in the surgery of the face.

The next important point is the application of the same principles of our knowledge of regeneration to the facial nerve in paralysis of the face.

In the facial nerve we have three types of paralysis, which concern the surgeon, and they occur in three different and distinct locations: First, that from infection identical with the anterior poliomyelitis of the cord. It, however, affects the fasciculus teres in the floor of the fourth ventricle—a continuation of the anterior gray matter of the cord. Second, that from lesions of the nerve in its canal, in the temporal bone. Third, that from lesions and divisions of nerves outside, the stylo-mastoid foramen. The differential diagnosis as to the location of the primary lesion is easily made. With the inflammatory conditions of the fasciculus teres all of the muscles supplied by the facial are not paralyzed, as the facial trunk receives outside of the cord some axons from the nucleus of the third. These axons supply the anterior portion of the occipto-frontalis, the corrugator supercillii and a few fibers of the upper half of the orbicularis palpebrarum. These muscles, therefore, retain their motion when all of the others are paralyzed as a sequence of a lesion of the fasciculus teres. This is the common infantile type of facial paralysis. In lesions of the bony canal and in divisions outside of the foramen the above mentioned muscles, with all of the other facial muscles, are

paralyzed. The central type was beautifully illustrated in three cases of facial paralysis which I operated in the last five weeks.

In the other class of cases, namely, patients with paralysis of the facial nerve from a lesion in the temporal bone or extra-foraminal division or involvement have complete paralysis of the facial nerve, with no motion whatever in any of the muscles, because before the nerve enters the bony canal it has in it both axons that originate in the nuclei of the third and seventh nerves, and you can make a differential diagnosis at once as to whether it was an inflammatory condition that occurred in the bone and compressed the axons, producing a permanent degeneration, or whether it was a central nuclear disease similar to that of anterior poliomyelitis. No matter where the primary pathologic lesion is, the treatment is the same—that is, to expose the nerve when at the stylo-mastoid foramen, as indicated on the blackboard, and it is not at all difficult if you observe a few points; cut into the sheath of the sterno-cleido-mastoid muscle; curve around its anterior surface, and you come at once to the posterior belly of the digastric as it comes forward from its attachment to the anterior surface of the mastoid process. Just anterior to that you will find the belly of a muscle running downward, the stylohyoid, and in that triangle you will readily find the facial nerve at its exit from the foramen. By this method you arrive without cutting through the parotid gland, without dividing any other muscle than the sheath of the sterno-cleido-mastoid, and without the slightest danger of injuring the facial nerve itself; going on to the posterior belly of the digastric close to the bone spread the dissecting scissors, and the nerve comes out of the foramen.

A little below and behind, on the tip of the transverse process of the atlas, can be found the spinal accessory which passes from in front backward and downward. If the hypoglossal is divided it is very accessible one-half inch lower down in the triangle and just internal to the tip of the transverse process of the atlas.

I use the spinal accessory because it gives the patient the least annoyance and inconvenience; there is but little drooping of the shoulders when the spinal accessory alone is divided, but when the rhomboidal branches of the fifth cervical are severed with it, as so often occurs in operating for tubercular cervical adenitis, there is great drooping of the shoulder and "winging" of the scapula.

When the hypoglossal is appropriated the disturbance in speech and motions of the tongue is not inconsiderable, indeed, it is often very annoying to the patient and produces a marked change in expression of speech. Both the spinal accessory and the hypoglossal are equally accessible from a technical standpoint.

In the treatment of this condition we must observe principles governing regeneration of motor nerves; in order to secure functional union of a motor nerve we must make an end-to-end union of its axons. You will find in the literature of the last three or four years that it has been advocated to split the nerve, pull it through and attach it to the side. That is ineffectual and accounts for many of the partial failures that

have been obtained. By remembering the elementary facts that in order to get union of a nerve we must have axonal contact, that we must have a denuded medullary sheath, and that these axons must be brought into end-to-end union, we are more likely to achieve success. With primary axonal contact, if we do not allow the interposition of connective tissue in the healing, we will have a rapid union and re-establishment of function. The word rapid is a relative term only. Remember, it will not be in a week, two weeks, twelve weeks or fifteen weeks, but it may be twelve or fifteen months before we have re-establishment of function of all axons of the nerve, so that our reward in this branch of surgery is slow but nevertheless certain.

The point of anastomosis should be encapsulated either in a fascia, muscle or wrapped in egg membrane to permit connective tissue interposition during repair.

In every nerve union a part of the technic is that the direction of the current must be continuous; otherwise there will be either failure of transmission or failure of regeneration.

Lastly, I wish to say that in the treatment of anterior poliomyelitic paralysis—in fact, in every type of paralysis of the third division, where we have made end-to-end union of the nerve, removing the connective tissue which covered the axons—we have had a return of function as a result. Furthermore, I believe it should be laid down as a rule that end-to-end approximation of a nerve is as much an immediate surgical demand as is end-to-end union of bones after fractures.

DISCUSSION.

Dr. Edwin W. Ryerson, of Chicago:—There is one point in which I differ with Dr. Murphy. If I understood him, he said that in nearly all nerve anastomoses which have been made in recent years for anterior poliomyelitis the nerve has been pulled through a slit made in the body of the healthy nerve, and this cut end has been sewed parallel to the healthy nerve. That is not the case.

Spitzy has probably done more of this work experimentally than any other man. Spitzy's method is briefly this: Instead of cutting or dividing the slit through the healthy nerve, he simply with a blunt needle teases the nerve longitudinally, parallel to the fibers, until he has made a narrow recess in the nerve; the end of the diseased nerve is then tucked into that little slit (where it probably approximates, end-to-end, a few of the neurons) and is pushed up against the healthy fibers, although, of course, it may not actually meet end to end with healthy fibers. That is the only way in which Spitzy has worked, and it is the only safe way to work. I have done more of this type of transplantation than any other individual surgeon has yet reported, and I shall report later the results. It is absurd, in my judgment, to stick a nerve through a slit and tie it up alongside of the healthy nerve, because there is then no possibility of regeneration. It is also a fact that by the method which I indicate the results are not as good as they would be if we were to do end-to-end anastomosis by the suture method. But we can not do that in anterior poliomyelitis, because we have to conserve the nerve power for the healthy muscles as well as supply new nerve power for the useless muscles. If we made an end-to-end anastomosis of the paralyzed nerve with a healthy nerve, we should simply substitute one form of paralysis for another. If we took, for instance, a healthy peroneal nerve and sewed it end to end with a diseased posterior tibial, we would simply be substituting a varus deformity for a

valgus. And this is not advisable in infantile paralysis. We know that this implantation method is as yet imperfect, but it does no harm, at all events, and may be so improved by experience as to be uniformly beneficial.

Dr. Hugh T. Patrick, of Chicago:—I did not expect to be called upon to take part in this discussion, although it is interesting to me from the standpoint of a neurologist. The real, good work is in infancy, and it is very encouraging to have men like Murphy and Ryerson take it up.

Some of the results of facial anastomoses have been good. I saw one a few days ago in which the result was simply marvelous. I could hardly believe such a good result could have been obtained. In other cases the results have been deplorably bad, due largely, perhaps, to imperfect technic in connection with the operations. But these operations, as they are now done, are hopeful and promising. They not only promise well, but promise well in cases which would be absolutely hopeless if left alone, leaving the patients with more or less disability. Sometimes these disabilities are severe, although not dangerous to life, and these operations promise relief. I must confess that sometimes the surgeons and I are at dagger's point, scientifically speaking, but in this particular subject I am very heartily in accord with them, and I must say they are accomplishing things which the internists and neurologists can not hope even eventually to approximate.

Dr. Frank B. Lucus, of Peoria:—Dr. Murphy mentioned the placing of a plug of paraffin over the openings to cover the nerves in, and he said it was not absorbable. We have used paraffin for injection in cases where there is deformity of the nose and other deformities for the purpose of perfecting these parts, though it has been supplemented afterwards by connective tissue. If so, why would not the nerve eventually penetrate the connective tissue which would remain?

I would like to ask Dr. Murphy in regard to the length of time paraffin remains unabsorbed.

Dr. Murphy (closing the discussion):—Just a word. I am sure Dr. Ryerson misunderstood me. I said in many of the results that had been reported recently the erroneous method I described was responsible largely for the partial failures, not that all the operations had been done that way.

I wish to refer to a matter in connection with Dr. Ryerson's work, one which concerns us most in the treatment of the athetoid movements that occur in cases of paralysis. For instance, take the sciatic, we have it dividing into the external (extensor) and internal (flexor) popliteals; these fibers occupy a regular definite anatomic position in the sciatic trunk from the trochanter to the popliteal space, as is well known, it is unnecessary to even use the faradic electrode to determine their positions. In the sciatic there is one basis only for success, and that is to diminish the power of the flexor, the neurons of contraction, and strengthen the power of the extensor axons. If you can produce axonal contact by scraping and raking the neurilemma and medullary sheath from the axons, good; but it is crude, imperfect and unscientific work as well as disappointing in the results. The method that has been adopted by Frazier and Spiller in the athetoid cases was to partially divide the nerve, and in that way reduce the contractile force; we have taken advantage of this principle in the treatment of paralysis of the external popliteal by making a niche in the internal popliteal, cutting into it half of the way, displacing it and suturing the entire distal end of the external popliteal into the niche, so that we can get an end-to-end axonal contact with the assurance of axonal regeneration in the external popliteal. You diminish some of the power but you get the use of muscles that are balanced, and that is what we endeavor to do in tendon transplantation as well as in nerve transplantation in the treatment of anterior poliomyelitic deformities.

With reference to the question asked by Dr. Lucas regarding paraffin, I will say that we use the oil of sesami and the oil of spermaceti in making the Moorhof plug. The oil of spermaceti is an animal oil and is absorbable, but the coal tar paraffin is not absorbable, and whenever it is put under the skin in tissue in large or small quantities it remains permanently, notwithstanding Morton's experiments, which apparently contradict, but in reality support this, as the spermaceti paraffin is absorbable and is replaced by connective tissue. Coal tar paraffin should be used to improve deformities; oil of spermaceti paraffin should be used to fill all bone cavities.

THREE UNUSUAL FATAL CASES IN GALL-BLADDER SURGERY.*

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"Growing is discovering our faults and overcoming them."—Elbert Hubbard.

Much of the real progress in all branches of science has been a growth springing up from the soil fertilized by error. In truth, failure is an error only when we neglect to profit by it.

I report the three following fatal cases as an illustration of the atypical forms we sometimes meet with in gall-bladder work, and with the hope of pointing the way to methods of treatment calculated to bring about in similar cases more favorable results.

CASE 1.—This was a case with an immense stone in the gall bladder, complicated with exophthalmic goiter, the symptoms simulating benign pyloric obstruction. Mrs. Lizzie D., of Rockford, Ill., aged 49, was seen on the 22d day of March, 1903. The history of the case carries the trouble back ten years prior to this date, when she had occasional attacks of severe pain in the epigastric region radiating to the back and chest and associated with bilious vomiting. Jaundice was never present.

This part of the history was obtained after considerable questioning along this line, for the patient herself gave a history of only nine months' illness, an illness comparatively free from pain, the predominant symptoms of which were apparently of gastric origin. For nine months she had stomach trouble. At first it was not serious—indigestion with occasional vomiting of a meal. Gradually the vomiting became more frequent. Six months after the beginning of the stomach trouble the vomiting became so persistent that nutrition was impaired and the patient lost strength and was unable to do hard work.

The patient had had a goiter of considerable size for ten years, with slight prominence of the eyeballs, but until recently there had been absence of cardiac symptoms of pronounced character. She had always been a hard working woman—first as a house wife on the farm and later as a practical nurse. The goiter had never interfered with her labor. Her usual weight was 150 pounds, but at the time I saw her it had de-

* Read at the Fifty-seventh Annual Session of the Illinois State Medical Society, May 21-23, 1907.

creased 30 pounds. She was able to sit up part of the day, but all food taken into the stomach was vomited at once or within ten minutes. Six weeks previous to my first visit she had been in Chicago and had undergone an operation by a prominent surgeon, a partial thyroidectomy having been performed, the operation being done upon the assumption, no doubt, that the gastric symptoms were a reflex neurosis from the hyperthyroidism. She made a good recovery from the operation, but experienced no relief from the gastric symptoms.

I ventured a diagnosis of pyloric or duodenal obstruction due either to contraction of an old healed ulcer or to adhesions about the gall bladder involving the duodenum or to pressure of a gall stone itself. An exploratory laparotomy was advised. After experimenting a week with gastric lavage and rectal feeding without improving the patient's condition, she submitted to a laparotomy.

The usual incision for gall-bladder operation was made, the pyloric end of the stomach drawn into the wound and the pylorus explored and found to be normal in every respect. There were some adhesions about the gall-bladder region involving the duodenum. An examination of the gall bladder revealed a stone as large as a pigeon's egg tightly grasped by the thickened contracted gall bladder. The gall bladder was opened and the stone was removed with great difficulty. There was no bile in the gall bladder and none appeared after the removal of the stone. The operation was concluded after the usual method in cholecystotomies.

The patient experienced but little shock and rallied well from the operation, but in 12 hours the pulse rose to 140, the temperature reached 104°. There was a slight cough and great dyspnea. Moist râles could be heard over both lungs. These unfavorable symptoms rapidly became more pronounced and the patient died on the second day, death being due to pulmonary edema. Autopsy not obtained.

Case 2.—Cholelithiasis; operation, cholecystotomy; death from acute gastric dilatation.

Mrs. Mary H., aged 38, referred to me by Dr. Segerlund, of Caledonia, Ill. She gave the usual history of cholelithiasis, though hardly so pronounced as to be classed as typical. The attacks of pain were not of the sharp cutting character, but were of a dull, boring nature. There was some stomach trouble, occasional vomiting, but no jaundice.

Her attending physician had diagnosed the case as one of gall stones and recommended an operation. She entered the hospital April 17, 1904, and three days later I performed a cholecystotomy, removing about half a dozen stones from a very much contracted and thickened gall bladder. The gall bladder was stitched to the peritoneum with some difficulty owing to the contracted condition of the organ and as a precaution against leaking into the peritoneal cavity the Mayo gauze apron was anchored by several cat-gut stitches above the gall bladder and the free end brought out of the abdominal wound. The gall bladder itself was drained with rubber drain.

The patient did not take the anesthetic well, and during the operation vomited considerable bile. After recovering from the anesthetic this

bilious vomiting continued, large quantities of bile and mucus would flow from the mouth with but little effort at vomiting.

On the second day the pulse and temperature began to rise, the vomiting continued, the abdomen became tympanitic and the patient showed signs of exhaustion. The vomiting of large quantities of bile and mucus occurred very frequently, scalding the side of the cheek over which it flowed. Intestinal obstruction was thought of as a possibility, but soap suds and turpentine enemas removed large quantities of flatus, temporarily relieving the patient's distress, and there was no tumor palpable through the abdominal walls and no exaggerated peristalsis. The weak pulse and exhaustion of the patient seemed out of all proportion to any complication we were able to discover. She died on the third day.

At autopsy nothing was found about the site of the operation to account for death. One of the stitches holding the gall bladder into the abdominal wound had given way, but there was no leakage into the peritoneal cavity. The peritoneum was free from septic conditions. The stomach was greatly dilated and contained a quart and a half of bile and mucus. A half-dozen small gallstones were found in the cystic duct. The heart muscles were soft and flabby.

In the duodenum there was a constriction which at first sight I thought was an obstruction, but I was able to force gas and fluid through. I did not understand at the time the significance of this condition. Since studying the literature more thoroughly I have concluded that this was a case of acute gastric dilatation.

Ridel,[1] of Jena, speaks of various complications following laparotomy for gall stones. One of these he designates "excessive vomiting with subsequent dilatio ventriculi acuta."

Of this condition Riedal says: "Now a condition simulating peritonitis further develops from colliquative vomiting after the operation as a result of acute gastrectasis. Either the ordinary emesis from the chloroform immediately progresses into a more severe vomiting, or the patient begins to vomit excessively twenty-four to forty-eight hours after the cessation of the anesthetic influence. At the same time there is a slight distension, first of the epigastric region, later also of the left umbilical or hypogastric region."

Acute gastric dilatation most frequently follows operations conducted under general anesthesia. Its mechanism is not fully understood. It generally is associated, however, with some form of duodenal obstruction. This obstruction, which appears at the lower portion of the duodenum, seems to be produced by compression of the duodenum upon the vertebral column by the root of the mesentery which passes over it at this point and which is drawn taut by the dragging of the intestines as they fall into the pelvic cavity.

According to Conner,[2] "the development of mesenteric constriction is favored, therefore, by whatever facilitates the entrance of the small intes-

1. Disturbances in the Course of the After-treatment of Gallstone Operations. By Prof. B. Ridel Jena, Germany. Translated by Dr. G. G. Eitel, Minneapolis. The Clinical Review, v. xxiv, p. 3. December, 1906.
2. Conner, L. A. Am. Jour of the Med. Sciences, March, 1907.

tines into the true pelvis (dorsal decubitus, a mesentery of suitable length, an empty and collapsed state of the gut) and whatever renders the duodenum more liable to compression (increased lordosis of the lumbar vertebra, low position of the duodenum).

Great dilatation of the stomach would doubtless increase the liability to mesenteric obstruction by crowding the intestines into the pelvis, and would tend to prevent the escape of the gut from the pelvis, to render such obstruction when once formed more complete and permanent."

The great mortality (72 per cent.) is due undoubtedly to the fact that the condition is frequently unrecognized. Early treatment would save most cases.

In non-operated cases the knee-pectoral position would naturally suggest itself as a means to overcome the difficulty.

In operated cases, gastric lavage is practically the only means of relief. This treatment is also a preventive, for, if the stomach is frequently emptied, dilation can not occur.

In both of these cases I believe a cholecystectomy was indicated, though we can not say that the result would have been different.

CASE 3.—Cholecystitis, complicating pregnancy, mistaken for pernicious vomiting of pregnancy. Gall-bladder symptoms simulating gall stones. Operation, cholecystotomy; recovery. Later laparotomy for adhesions; death from hemorrhage of the liver.

Mrs. A. J. C., aged 35, referred to me by her physician, Dr. Fahrney, of Oregon, Ill.

This patient came under my care March, 1904, with a history of having had one child two and a half years previously and was then pregnant seven months. Since the beginning of the last pregnancy she had suffered frequently from violent attacks of vomiting associated with great pain in the upper abdomen. The suffering was so great that from ½ to ¾ of a grain of morphin were taken hypodermically to procure rest. These attacks occurred so frequently that she lost strength rapidly and was confined to her bed most of the time. After one of these attacks she was sent to the hospital at Rockford, her physician thinking it might be necessary to induce premature labor to save her life.

She was kept in the hospital one week. All food by the stomach was prohibited and nourishment maintained by nutritive enemata. During this week she was comfortable, having had no return of the trouble. She improved in her general health and was allowed to leave the hospital to remain with her parents a mile distant from the city. Light diet was allowed with the privilege of a gradual increase to full diet.

One week from the time of leaving the hospital she had a severe attack of pain and vomiting and I saw her in the attack for the first time. A diagnosis of gall-bladder trouble was made—probably gall stones. Morphin relieved the attack, which was followed by tenderness in the gall-bladder region for several days.

She was placed upon phosphate of soda 1 drachm in a cup of hot water an hour before meals and one or two ounces of olive oil at bed time. With this treatment it was hoped to tide her over her confinement, after which the gall-bladder trouble could be relieved by operation. She was

allowed to return to her home. She improved much in health, although suffered several attacks. On the expected date of confinement she returned to the hospital, was soon after delivered of a healthy child and again returned to her home.

Three months later she suffered several severe attacks of the old trouble and returned to the hospital for operation.

Operation, Oct. 2, 1904, cholecystotomy. The gall bladder was thickened, dilated and adherent to surrounding tissues, but contained no stones. For one year the patient enjoyed excellent health and then returned, complaining of all the early symptoms.

An examination revealed a right-kidney displacement of the second degree. The kidney was replaced and held in position by a pad and firm abdominal supporter. Relief was obtained for another year, when pain and vomiting again appeared and the patient returned for relief.

Diagnosis: Gastric adhesions producing pyloric obstruction.

Operation, Oct. 13, 1906. The fundus of the contracted gall bladder was held firmly to the peritoneum at the site of the first operation and its side was adherent to the lower border of the liver. Numerous strong bands of adhesions extended from the gall bladder to the duodenum and pylorus, causing a misplacement and obstruction of these organs.

The adhesions were released and the gall bladder removed. Dr. E. W. Andrews' operation (cholohepatopexy, colon substitution) was performed. The abdomen was closed without drainage. Death followed on the third day, apparently from exhaustion.

Postmortem examination of the abdominal cavity was made. A number of blood clots were found and a large quantity of bloody bile filled the abdominal cavity. The bile had escaped from the cystic duct on account of the slipping of the ligature. The hemorrhage occurred from various points where the gall-bladder adhesions had been released from the liver.

Had a drainage tube been placed in the location of the severed cystic duct and the peritoneal cavity been protected by gauze tampon, the conditions at least would have been revealed and death possibly prevented. It is questionable, however, if we should have incurred the risk of a cholecystectomy, for it was the conditions induced by this procedure that brought about the fatal result.

POSTOPERATIVE GALL-BLADDER AND GALL-DUCT FISTULÆ.

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A search of the literature can not fail to impress one with its poverty on this subject. The brilliant achievements attained by surgical procedures in gall-bladder and gall-duct diseases seem to have eclipsed, in a marked degree, some conditions that sometimes follow these procedures, and which are of great importance to both surgeon and patient, prominent among which are gall-bladder and gall-duct fistulæ. Possibly the paucity of the literature concerning this subject is due to the fact that a

large mortality is not consequent upon it; hence it is considered one of the minor accidents of major work. Whatever may be the cause of the silence, the subject is important and should receive the attention due it.

In a very large majority of these cases, they follow operations upon the gall bladder for cholelithiasis or for cholecystitis, in which a drainage operation has been done and in which the gall bladder has been attached to the abdominal parietes and used as a drainage canal for the rest of the biliary system. However, this is not the universal manner of their formation. They may form after cholecystectomy, the bile escaping from the cystic duct, the latter not being securely ligated the bile follows the course of the gauze drainage, forming a fistula, or they may form in like manner after operations upon any of the gall ducts.

These fistulæ are all classed in the literature under the general term of biliary fistulæ, though in a large per cent. of cases bile is not discharged through them. We believe a better nomenclature would be for a general term gall-bladder or gall-duct fistulæ, and, if necessary to be more explicit, add the character of the discharge. For instance, biliary gall-bladder fistula, from which term we would understand a gall-bladder fistula exists from which bile is being discharged, or a mucus gall-bladder fistula, which term would convey the idea that a gall-bladder fistula existed that was discharging mucus. For the purpose of being definite and certain, these fistulæ should be placed in three different catagories: First, those that discharge bile or biliary gall-bladder or gall-duct fistulæ; second, mucus gall-bladder or gall-duct fistulæ, and, third, pus gall-bladder or gall-duct fistulæ. For, as a matter of fact, all of these conditions are found in practice and must be discussed and dealt with.

It is also true that the discharge from these fistulæ is never primarily the causative factor in their production or continuation. For instance, in biliary gall-bladder fistulæ, the bile that is discharged through them is never the underlying cause of the condition. The same may be said of the other varieties of fistulæ. In other words, the cause of these fistulæ must be sought for outside of the discharge itself.

While this is true, the discharge from these fistulæ is a very potent factor in determining the true cause and location of the condition. If the discharge is bile, our knowledge of the physiology and anatomy of the gall ducts leads us at once to locate the trouble either in the cystic duct or common duct. We know that the cystic duct is provided with from eight to ten valves or folds of mucous membrane distributed throughout its length and known as the folds of Heister. The normal action of these folds or valves, we believe, is to regulate the flow of bile through the cystic duct into the gall bladder, their action being controlled by sympathetic nerve fibers. When the gall bladder, however, is drawn out through the external parietes and fastened, the cystic duct is abnormally placed and for a time the nervous action that controls the folds of Heister are suspended and the bile flows more readily through the cystic duct into the gall bladder than through the common duct into the duodenum. The suspended action of the folds of Heister, however, is only temporary, and in the great majority of cases in from two to four weeks the normal action of these folds is restored, and the bile, no longer being able to

pass through the cystic duct into the gall bladder, passes through the common duct into the duodenum and the biliary fistula closes and the case is terminated. In quite a large per cent. of cases, however, the above program is not consummated. The valves of Heister do not regain their normal function and the bile continues to flow through the fistula until remedied by some surgical procedure. In these cases the function of the folds of Heister have been destroyed by the diseased condition before the drainage operation was performed; hence the bile continues to flow through the cystic duct and fistula uninterruptedly until remedied by surgical measures.

We have stated that the cause of biliary fistulæ may also be found in the common duct. We believe, however, that biliary fistulæ are never due to conditions of the common duct except in diseased states, the influence of which disease either suspends or destroys the normal action of the folds of Heister. In other words, if the folds of Heister are normal and working normally, there can not be sufficient hydrostatic force created by the accumulation of bile in the common duct to force these valves and allow a constant and free flow of bile through the cystic duct. Hence we believe simple mechanical obstruction of the common duct will not cause biliary fistulæ through the cystic duct. We believe that disease of the common duct may, in rare cases, destroy the action of the cystic duct, but that, as a rule, and in a majority of cases, conditions of the common duct can not be seriously regarded as the cause of biliary fistulæ through the cystic duct. Of course, there are cases of biliary fistulæ due to operation upon the common duct for diseased conditions, but in those cases the proposition is different, as the fistulæ are connected directly with the common duct.

When we have a condition of mucus gall-bladder fistula with which to deal, the cause will again be found in the cystic duct. In the drainage operation that has been done there may have been a stone overlooked in the cystic duct, or a stone may have entered the cystic duct from the hepatic duct after the operation, or the cystic duct may have been so attached to adjacent tissues by adhesions that when abnormally placed by the operation the adhesions constricted or bent the duct, or by abnormally placing the cystic duct by the operation, a kink was formed in it. Any of these conditions might occlude the duct and prevent the normal secretion of the gall bladder escaping through it; hence the gall bladder is filled with its own secretion which runs over through the drainage opening in its fundus, which condition will continue until remedied surgically. A purely mucus gall-duct fistula is hardly possible, the mucus will be mixed with bile if the mucus comes from the gall ducts.

When we are to deal with a pus gall-bladder fistula, the drainage operation has been in a very large majority of cases for draining a gall bladder that should have been removed. In these cases, among other conditions that might have been present, the gall bladder was chronically diseased, or a chronic cholecystitis was present; but in the judgment of the surgeon amenable to drainage treatment. This is an error of judgment only and may happen to any of us. The gall-bladder disease instead

of yielding to the drainage treatment, persists. The walls of the gall bladder become thick and contracted; the cystic duct closes for reason of the diseased condition in the gall bladder, and a discharge of pus from the bladder wall takes place through the fistulous opening in the fundus. Sometimes these fistulæ will close for a few days and then reopen and discharge a limited amount of pus, and then close again unless kept open by frequent dressings. This condition continues indefinitely or until remedied by surgical measures. These patients are comfortable while the fistula is open and discharging, but if it closes for any length of time they are in distress.

We also have a fourth form of fistula following drainage operations upon the gall bladder, the discharge from which varies. There is some mucus discharge all the time, but intermittently there is also a biliary discharge mixed with the mucus. From the nature of the discharge we are again able to locate the cause of the trouble. From the intermittent flowing of the bile we may safely conclude that the cystic duct is functionating normally, and from the flow of mucus we may conclude the mucous membrane of the gall bladder is healthful. Our attention will then be directed to the mouth of the fistula, and here we find the mucous membrane everted or rolled out, preventing the healing of the fistulous opening. This condition is due to an infiltration or swelling of the mucous membrane at the mouth of the fistula. The term fistula as used in this paper means an opening made in the gall bladder for drainage purposes that does not close in a reasonable time after the operation. In cases of biliary gall-bladder fistulæ, it may close in two weeks or not for a month. If it is open six weeks after the operation it should cause concern, and if not closed in two months surgical interference should be instituted.

In mucus gall-bladder fistulæ the system is not being robbed of any thing that is essential to it, and the time of surgical interference may be adjusted to suit the patient. In the pus fistulæ, as long as they are kept open and drain, the patient is comfortable and comparatively safe, yet it is the best practice to remedy this condition as quickly as possible.

In those cases where the rolling out of the mucous membrane at the mouth of the fistula prevents its closing, nothing is to be gained by waiting longer than a reasonable time. Kehr's conical plug may be tried in these cases before more radical measures are used.

As to the frequency of occurrence of postoperative gall-bladder or gall-duct fistulæ, we are not in possession of a multitude of statistics, neither can we exhibit extended data concerning this point, for the reason that such data does not exist. As before stated, the paucity of the literature upon this whole subject is remarkable, and especially upon this point.

Mayo Robson, after discussing biliary fistulæ due to conditions other than operative, states it would be of greater value if we could give statistics of the number of times that fistulæ follow operations, but this is seldom mentioned by operators. He, however, reports 536 cases of his own, 416 of which were cholecystotomies. Of the 536 cases, there were 18 cases of postoperative fistulæ, but, as five of these occurred in the first ten

cases, since which time the method of procedure has been changed, it is fair to say that 13 occurred in 406 cases, or in a little more than 3 per cent. of the cases. In my own work fistulæ have followed cholecystotomies twice in 40 cases, but none occurred until 30 cases had been operated upon. The cases in my own work are too few to be of statistical value standing alone. I believe, however, that we may safely infer that if this condition follows in 3 per cent. of the cases of Mayo Robson's work that this is the per cent. we may expect under the most favorable circumstances, and that under less favorable circumstances we may expect postoperative fistulæ in 5 per cent. of the cases in which drainage operations are done upon the gall bladder or gall ducts.

Kehr (v. Bergman's Surgery, vol. iv, page 693) states that in 700 operations for cholelithiasis he has not had a permanent fistula. He does not state how frequently they have occurred in his work or his treatment for the condition. We are only certain of two things, from his standpoint: first, fistulæ occur in his work, and, second, he is successful in their management.

The treatment of these different fistulæ is always surgical. When we are to deal with a biliary gall-bladder fistula we are always confronted with a serious condition. The patient can not be deprived indefinitely of his bile, neither are we justified in an endeavor to close the mouth of the fistula unless we know the common duct is patulous. We must open the abdomen and discover, if possible, the reason why the bile does not pass through the common duct into the duodenum. If there is an obstruction of the common duct we must remove the obstruction if possible. If, however, the normal action of the folds of Heister are destroyed, and the cystic duct is wide open, the bile may still flow through the cystic duct and out of the fistulous opening, even though the common duct is open, this being in this case the channel of least resistance. In such cases we can only finish our work and wait for results, hoping that the cystic duct will regain its normal function.

We may now resort for a time to Kehr's conical plug placed in the mouth of the fistula, thus forcing the bile through the common duct into the duodenum, hoping that the cystic duct will regain its function and terminate the case. If our hopes are not realized in a reasonable time, cholecystectomy is indicated, with a removal of as much of the cystic duct as possible. The channel of least resistance to the flow of bile being thus removed, the bile will flow through the common duct and terminate the case. If for any reason the obstruction to the common duct can not be removed, a cholecystenterostomy is indicated after loosening the gall bladder from its parietal fastenings.

If we have a mucus gall-bladder fistula with which to deal, we must try and remove the obstruction to the cystic duct and close the fistulous opening in the gall bladder after loosening it from the abdominal wall. If for any reason the obstruction to this cystic duct can not be removed a cholecystectomy is indicated.

In pus gall-bladder fistulæ the gall bladder has been functionally removed by the diseased condition and cholecystectomy is indicated.

When the fistula is due to rolling out of the mucous membrane at the mouth of the fistula, we must loosen the gall bladder from its parietal attachments and close the fistulous opening by folding in the mucous membrane and stitching the peritoneal coat over it. The mortality connected with these conditions is not so large as for corresponding operations for other diseased conditions. This is true because the patients are usually in a better condition for the second operation than they were for the first.

DISCUSSION ON PAPERS OF DRS. ALLABEN AND BARKER.

Dr. George N. Kreider, of Springfield.—Mr. President: I was in hopes that some one else would start the discussion on these two excellent papers, for they are among the most important that have been brought before the section.

We must commend Dr. Allaben for his great courage in coming before this society and acknowledging his failures. We all have failures, but we do not have the courage to come here and say that we have had them and also state, as Dr. Allaben has done, how we might have avoided them.

There is only one suggestion I would make to Dr. Allaben and to those who operate for chronic gall-bladder disease, and that is, in every case a blood count should be made. The condition of the blood should be ascertained, because we know perfectly well that there is no disease which has so marked an effect on the blood as disease which involves the liver. In all probability, in some of his cases, the blood was in such a condition that coagulation was absolutely impossible. I think we would save ourselves a great deal of chagrin and our patients a great deal of disappointment if, after making a blood examination and finding the hemoglobin in a bad condition, we tell them their prospects are very slight; that the best opportunity for operation has gone by, but that if they insist on an operation being done it will be done. I have had some cases of this sort in which it was not the fault of the patient, however, that an operation was undertaken. The gall bladder was found very much shrunken and backed up under the liver, so that the surgeon failed to find it at all, and some months afterwards the patient was taken with a tremendous hemorrhage from the stomach and vomited seventeen gallstones and a stomach full of blood. We waited some days in this case, did an operation, found the gall bladder, and removed 150 more stones. But the blood failed to coagulate after this intense poisoning, and the patient died on that account.

As regards Dr. Barker's case, I think that any one who has done any gall-bladder surgery will have to acknowledge that these fistulæ occur and that their cure is not easy. One of my professional friends, whose name I will not mention, has just acknowledged to me that he had two more cases on hand, and I had to acknowledge two myself. One of these passed from my hands. Two operations were done by other surgeons in the vain endeavor to close the gall-bladder fistula. But probably one of them was undertaken with the idea that a gallstone was left behind. No gallstone, however, was found. Another surgeon made an attempt, but failed to close the gall-bladder fistula. I should like to have another chance to operate in this case, but I suppose I will not see the patient again.

I wish to congratulate Dr. Barker on bringing this important subject before us, as it has been instructive and interesting to most of us.

Dr. Edward H. Ochsner, of Chicago:—I do not believe that we ought to let the statement of Dr. Barker go unchallenged, namely, that the valves of Heister are responsible for the formation of biliary fistulæ. I do not believe that they have anything to do with it whatever, but that there are other factors which cause the formation of these fistulæ.

The most common causes of biliary fistulæ are obstruction in the common duct from stones, malignant growths or cicatricial tissue, obstruction of the cystic duct from the same causes, leaving behind foreign bodies in the gall bladder such as incarcerated stones, drainage tubing, lint from pads and unabsorbable ligatures, finally the thing that caused the greatest number of biliary fistulæ in the early operations for gallstones was the fact that the gall bladder was usually sutured to the skin or fascia. Since the gall bladder is being sutured to the perineum only, the number of persisting biliary fistulæ has become very small, indeed.

Among my own cases I have had only one such fistula and that was in a case in which I left behind an incarcerated stone. Some months ago I had a most interesting and, I think, rather unusual case. In a previous operation the gall bladder had been sutured to the abdominal wall on a level with the umbilicus, and the cystic duct instead of making a V with the common duct with the point of the V downwards made a V with the point upwards. As a result, it was easier for the bile to get into the cystic duct and flow out of the abdominal wound than it was for the bile to pass down into the common duct and into the duodenum. After the gall bladder was loosened and sutured into proper place higher up the wound healed promptly, while the previous two operations which had been performed for the relief of the fistula had been of no avail.

Dr. Allaben (closing the discussion on his part):—I appreciate what Dr. Kreider has said in regard to the blood test. I think it would be particularly indicated in the last case I cited, because in that case the vomiting, the pain and several operations the patient had undergone, together with the extra task imposed upon the system from pregnancy, reduced the patient's vitality and reduced the coagulating power of the blood.

I was surprised at the statement of Dr. Barker that these fistulæ are as frequent as he suggested, but, as Dr. Ochsner has pointed out, since we have learned not to stitch the gall bladder to the cutaneous surface or to the fascia, we very seldom get gall-bladder fistula. It is true, as Dr. Ochsner has said, that usually there is something present in gall bladder or cystic duct in fistula cases producing irritation or obstruction. In this connection I wish to cite the case of a woman, 62 years of age, who had a history of gall-bladder trouble of ten years' duration. Finally she had an acute attack of empyema of the gall bladder, simulating peritonitis. She was operated on, and the gall bladder relieved of six ounces of pus, drained, and five large gallstones were removed. The patient made a good recovery, but had a mucous fistula. The cutaneous wound would close occasionally, but when the gall bladder became full of mucus she would be distressed. It would break open or she would open the fistula herself to get relief. Two years later I did a cholecystectomy with the idea that the cystic duct was closed, and that removal of the gall bladder was necessary. There was present in the gall bladder a stone as large as a marble, enclosed in a pocket in the gall bladder in such a way that it was impossible to feel it or remove it at the time of the first operation.

Dr. Barker (closing discussion):—I had hoped this paper would bring out a discussion concerning the physiologic action of the folds of Heister. This, so far as I know, has never been the subject of discussion. We know these valves or folds exist; we are acquainted with their anatomy; we know their location. Nature never fails to provide the cystic duct with them. Do they have a function? If they have it is reasonable for us to suppose that they in some way regulate the flow of bile and gall-bladder secretion through the cystic duct. A great deal of study of this subject confirms me in this belief. The folds of Heister, in my judgment, are placed in the cystic duct to prevent the flow of bile into the gall

bladder, excepting as the secretion of the gall bladder is needed by the system, when these valves are opened by the nervous mechanism controlling them and the bile flows through the cystic duct (this being now the channel of least resistance) and mixes with the viscid secretion of the gall bladder, diluting it and rendering it more easy of expulsion by the feeble contractile force of the gall-bladder walls. I believe the secretion of the gall bladder, while it is not necessary to the life of the system, yet is essential to the highest degree of the system's well-being, and unless this secretion is delivered to the system as its needs demand its workings are impaired. We believe a closer study of the function of the folds of Heister will reveal some truths we ought to know, and we may here, with propriety, hint that out of this study the fact may be developed that the gall bladder is not a part of the biliary system at all, only so far as the bile possesses those qualities best adapted to rendering the gall-bladder secretion easy of ejectment by the feeble muscular force of the gall-bladder walls. For a more complete discussion of this subject we would call attention to an article soon to appear in the *New York Medical Journal.*

MALARIA AS A SURGICAL COMPLICATION.*

THOMAS M. ADERHOLD, M.S., M.D.
ZEIGLER, ILL.

Diagnosis.—Let us decide what is necessary before we can say that a patient has malaria. As diagnostic science advances we come more and more to the conclusion that only the finding of the hemameba malariæ in the blood is the absolute diagnosis of malaria. Malaria is probably the only disease that will produce a chill followed by fever and perspiration every other or every third day at the same hour; the temperature returning to normal on the days between. A chill followed by fever every day at the same hour may be malarial, but is much less liable to be than one which appears every other day or every third day. Chills and fever coming on in the morning are more liable to be malarial than those coming on in the afternoon.

On account of the well-known action of quinin in malaria, it is thought by some that a temperature which subsides after its administration is malarial. This is an error, and this coincidence taken alone should never be considered as a point in favor of a temperature being malarial. Quinin alone when given in 20 to 30 grain doses will reduce a temperature, and after operation a temperature will often subside without any medication. If, however, we should find a case where a temperature preceded by a chill came on every other day or every third day at the same hour, and having existed long enough for the patient to have had three or more chills and which subsides at once under 20 or 30 grains of quinin daily, we can say, with as much certainty as is possible without demonstration, that this is malaria. It is a clinical diagnosis and can be considered as positive as a typhoid diagnosis without an agglutination test of the blood. In dealing with malaria as a complication, one sees this symptom-complex so seldom that the only safe procedure is to accept nothing as a diagnosis except the finding of the parasite in the blood.

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

This is often a simple matter, but at times is extremely difficult. In a well-developed case with a specimen taken when large pigmented organisms are in two or three corpuscles in every field the diagnosis is easy. It is equally as certain that in an acute case with a specimen taken after the first chill before the fever has subsided with only a spore or a signet in 50 or 100 fields that the diagnosis is most difficult. Cases will appear at all stages between these extremes. One may often search an hour after the first chill, thirty minutes after the second and less than ten minutes after the third, before the organism is found.

It is an undecided question as to whether it is better to examine the stained or the fresh specimen to find the parasite. Circumstances make it easier to use one method or another. In the laboratory of the Zeigler Hospital we have made over 1,100 examinations since August, 1905. We have examined both stained and fresh specimens taken at the same sitting to see if all that was found in one could be demonstrated in the other. When Wright's stain came out prominently before the profession, we used it in over 200 examinations and then stained a number with it and azure II, which stain we had used in some 200 examinations previous to changing to Wright's. The comparison resulted in the adoption of the azure II as it is given in Wood's Diagnosis as being the simplest and most reliable stain. We have used it in 700 examinations since that time. A good microscope, with 1/12 oil immersion lens, substage condenser and mechanical stage, are essential in this work.

Regarding the merits of fresh and stained specimens for examination, we have come to the following conclusions:

1. In general, stained specimens are to be preferred, as they make a permanent record for future reference.

2. A negative diagnosis should not be made without examination for 20 minutes, each, of three fresh specimens taken twelve hours apart after the patient has had three chills or without the examination of two stained specimens taken in the same manner.

3. Organisms which contain movable pigment are easier seen in fresh specimens, and spores and signets are easier seen in stained specimens.

4. In fresh specimens, error is more liable to occur in mistaking crenating R. B. C., bacteria, or a small W. B. C. for the parasite.

5. In stained specimens, error is more liable to occur in mistaking débris, fragments of W. B. C., a small W. B. C. with granules, or an R. B. C. with decomposing granular stroma for the parasite.

The following cases have been selected from patients who had malaria during their surgical illness:

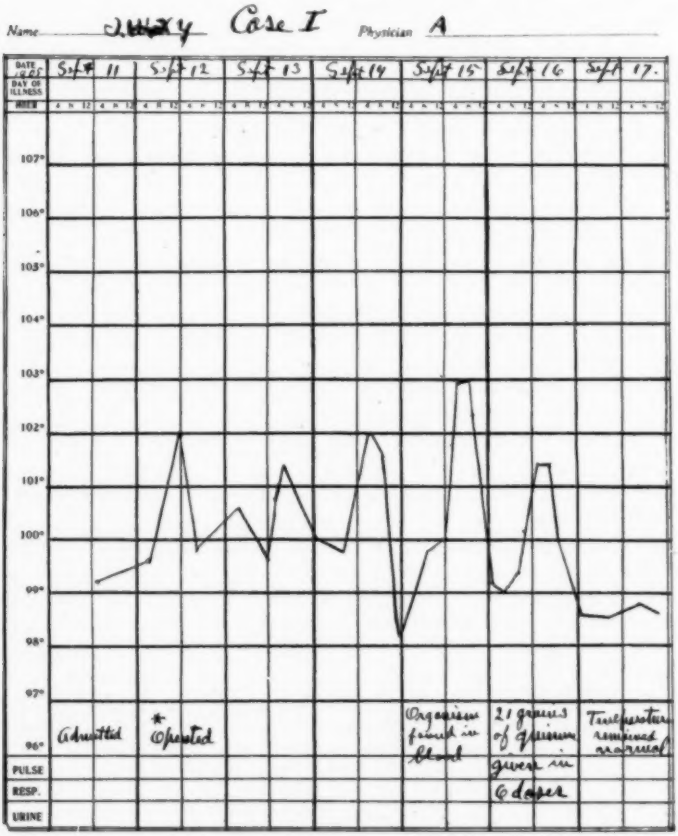
CASE 1.—*Diagnosis.*—Appendicitis. Admitted Sept. 11, 1905. Discharged Sept. 29, 1905. American, male, miner. No points of interest in previous history except he thought he had malaria some months previous.

Three months ago had attack of severe pains in abdomen which left a tender place near McBurney's point. Has had more or less trouble there ever since. Present attack began ten days ago; was similar to the first except was more severe and was nauseated. At the operation the appendix was found to be adherent to the cecum and contained two c.c. of pus near the middle portion. Wound was closed.

His temperature upon admission was 99.4 and on the morning of operation

was 99.6. There was a daily increase of temperature after operation until the third day it reached 103. Blood examination showed hæmamœba malariæ. Twenty-one grains of quinin were given within twelve hours. His temperature returned to normal and remained so. On account of the unpleasant effect of the quinin it was withdrawn and later given again. This patient suffered a relapse of malaria in May, 1906.

CASE 2.—*Diagnosis.*—Probable extrauterine pregnancy. Admitted Feb. 19, 1906. Discharged April 6, 1906. Family History: Father died of tuberculosis at 55. Mother living and well. One sister died during infancy. Cause not known.



Another died at 28 of some illness characterized by jaundice. Personal History: Had measles, whooping cough and typhoid fever as a child. Two years ago was ill with cough and soreness in right lung. Was told that she had tuberculosis. Began to menstruate at 14, painful, irregular. Married at 15, six pregnancies. First miscarried at 8 months, second at 6 months and third at 3 months. Fourth was born at term, labor and puerperium normal. Fifth also born at term, died at age of 2 after illness of 1 day. Is 6 months pregnant now, and felt life one week ago. Had malaria all last summer.

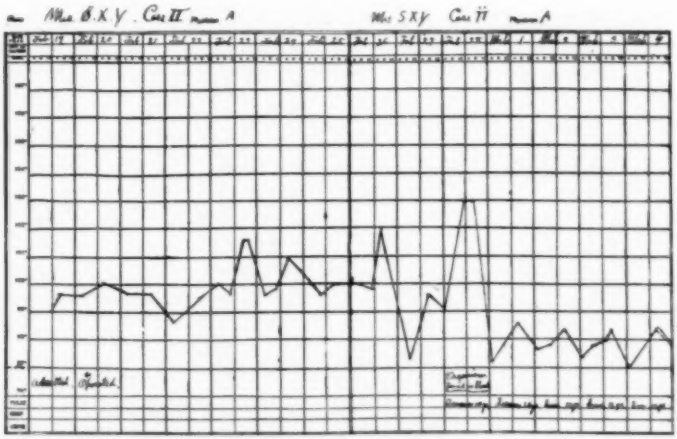
Present Illness: Eight years ago had illness characterized by a pain in right

lower quadrant. Was ill 3 or 4 weeks. Has had more or less pain in same place ever since. Two weeks ago began to have pains in same place. Pains at times were very severe. Swelling appeared and has continued to get larger ever since. Present Condition: Well nourished, appetite poor, bowels constipated, tongue coated, heart and lungs normal. A large palpable tumor in right side of abdomen extending from under ribs to pelvis and to median line. Uterus comes to umbilicus and can be felt to left of this.

Operating Record: Incision through right rectus. Tumor adherent to abdominal wall; opened; about one quart of bloody fluid and blood clots removed. Gauze and tube drainage inserted. Entire tumor mass removed.

This patient had a temperature of 99.6 at time of operation and continued to have. On February 26 it reached 102 and on February 28 it reached 103. A blood examination revealed the tertian parasite. Under quinin her temperature returned to normal within 12 hours and remained so. Patient was delivered at term and had normal labor.

CASE 3.—*Diagnosis.*—General bacteriemia. Admitted July 22, 1906. Discharged Dec. 31, 1906. Austrian, male, miner, aged 44. Was never ill. About



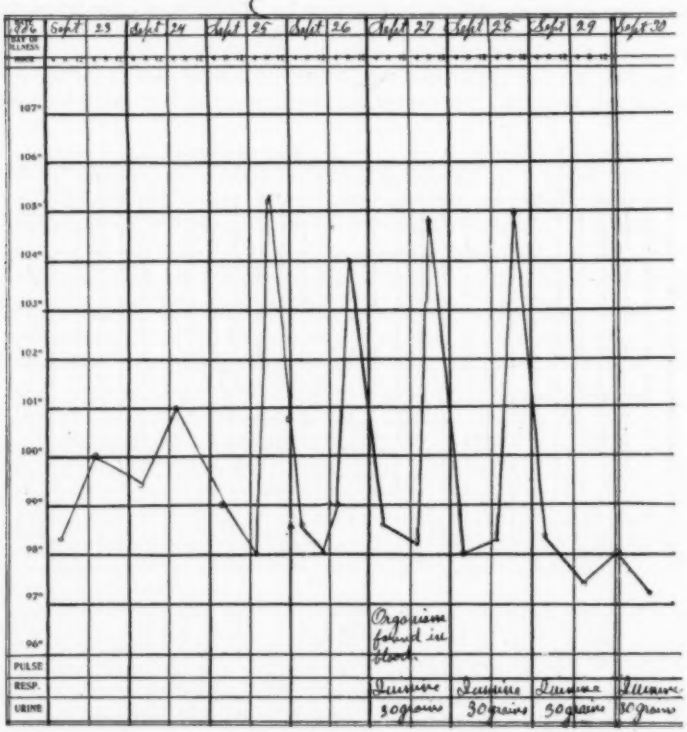
one week before admission noticed a swelling on right arm above elbow. No history of any injury. Swelling has become larger, red and painful, causing patient to seek relief. A small quantity of pus was removed by simple incision. Microscopical examination showed it to contain streptococci, tetraginus and staphylococci. A short time after this his right testicle and left knee became swollen. This subsided and he developed an osteomyelitis of the right humerus.

This patient's temperature was always irregular. On September 25 he had a violent chill, followed by a temperature of 105. The chill and temperature occurred again the next day and on the following day. His condition was apparently serious and a blood examination was made, more as a regular procedure for all febrile patients than that we expected to find malaria. To our surprise a double infection of tertian malaria was found. Within 48 hours after treatment was begun his temperature returned to normal and remained so. In all probability this man contracted his malaria in the ward or hospital grounds.

CASE 4.—*Diagnosis.*—Compound fracture of femur. Admitted June 15, 1906. Discharged Sept. 4, 1906. Austrian, male, miner, aged 23. No history of any illness. While at work had a mine drill thrust into the lower end of the right femur, breaking it into many pieces. Under complete anasthesia the fragments

were molded into form and a cast applied to the entire leg. This case ran a temperature and showed signs of sepsis from the time of accident. On August 21 he had a sudden rise of temperature and again on August 23. The every other day feature of the temperature caused a blood examination to be made. Tertian organisms were found. Thirty grains of quinin were given daily and after August 27 his temperature remained normal.

CASE 5.—*Diagnosis.*—Fracture of the skull. Admitted March 31, 1905. Discharged April 17, 1905; also admitted Sept. 25, 1905, and discharged Oct. 2, 1905. Hungarian, male, miner, aged 31. Could not speak English. No history of any previous disease or injury. While at work in mine was too close to a



blast when it was fired and quantities of coal were blown into his face and head. Many abrasions about face and head, the most severe of which was a cut 3 to 4 inches long on forehead, and fracture into frontal sinus. Was brought to hospital on stretcher and was semiconscious.

Treatment: All wounds were cleaned and scraped with sharp curette. Fragments of skull were elevated and lower table examined. Wound was dressed open with a gauze drain.

This patient ran a temperature of 99 to 100 for 5 days and was discharged in 18 days. On September 25 we were called to his house by a messenger who said that he was dying. He was suffering with violent convulsions and was brought to the hospital on the stretcher. His friends gave a history of him hav-

ing had a chill every day for three days. A blood examination showed that he had estivo-autumnal malaria. With 30 and 40 grains of quinin in solution, given daily, this man had two more chills, after which time his temperature remained normal.

While epileptiform convulsions occur in estivo-autumnal fever, it seemed strange that this man should have them unless his late accident had something to do with it. It required a diagnosis between septic inflammation, traumatic epilepsy and malaria.

In the above cases it will be noticed that:

1. The temperature recurred with more or less regularity, which is characteristic of malaria in uncomplicated cases.

2. In all cases it disappeared in less than three days under quinin.

3. While the patient had a temperature more or less irregular before the distinct malarial temperature appeared, after treatment with quinin the temperature remained normal.

4. In Cases 1 and 2 the operation probably precipitated the attack of malaria.

5. Cases 3 and 4 probably contracted their malaria in the hospital grounds.

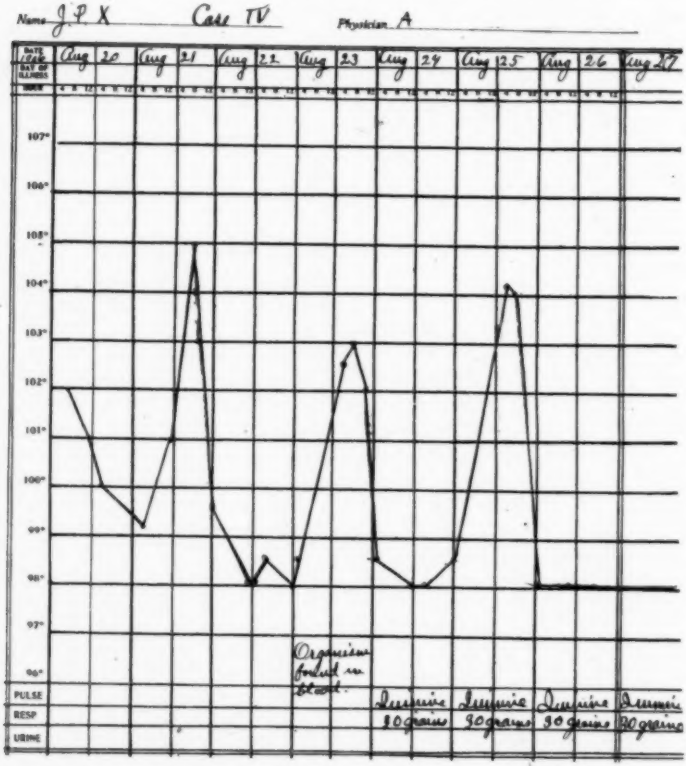
Treatment.—Quinin is the best known drug in the treatment of malaria. Next to be preferred is the fluid extract of cinchona, next iron and then arsenic. It makes no difference how the quinin is given if it is absorbed. The writer has not yet seen a case so severe that it could not be controlled by administration by mouth. If vomiting is severe, wait until it ceases, which will not be more than a few hours. Then give quinin hydrochlorate, either in solution or in capsules. The most effective way to give the sulphate is to dissolve it in nitrohydrochlorie acid, making a solution m. i to gr. i, and then diluting with equal parts of water and spirits of chloroform so that one teaspoonful equals ten grains. Chocolate-coated tablets are more easily dissolved than the old-fashioned sugar-coated ones and, so far as the writer knows, have never failed to produce results.

How much shall be given in 24 hours? Thirty grains is sufficient for a man, 20 grains for a woman, and children can take relatively a much larger dose than is given them of other drugs. Of cocoa quinin, one teaspoonful every two hours can be given to a child of 4 years, until 24 grains are given. The administration of quinin should be governed more by its physiologic effect than by arbitrary rules. When the patient's ears are ringing from its action, he is sufficiently cinchonized to produce destruction of the organism, and it matters not whether it takes 10 or 30 grains per day to do it. The large daily dose should be reduced after the symptoms subside if it produces unpleasantness.

In this section of the country it will seldom, if ever, be necessary to give quinin hypodermatically, but, for the benefit of those who may want to do it, I wish to quote Benson from Manson's Tropical Diseases, page 159. In an experience of 1,390 cases, he says that hypodermic injections of quinin are by far the most effective and economical. He used the sulphate dissolved in water by the aid of hydrochloric acid, making the solution contain 15 grains per dram. Of this, he injected 20 drops under the scapula or into the outer surface of the arm. In 614 consecu-

tive cases so treated not a single untoward accident occurred. Manson says that he has used it in both hospital and private practice and that he considers abscesses as due to faulty technic.

How long should quinin be continued? In the benign tertian, three weeks is sufficient, but in the estivoautumnal three months should be the minimum. The amount given should be given in at least two doses, but may be given in as many as twenty-four. For a period of one year the patient should take from 15 to 20 grains daily for two or three days



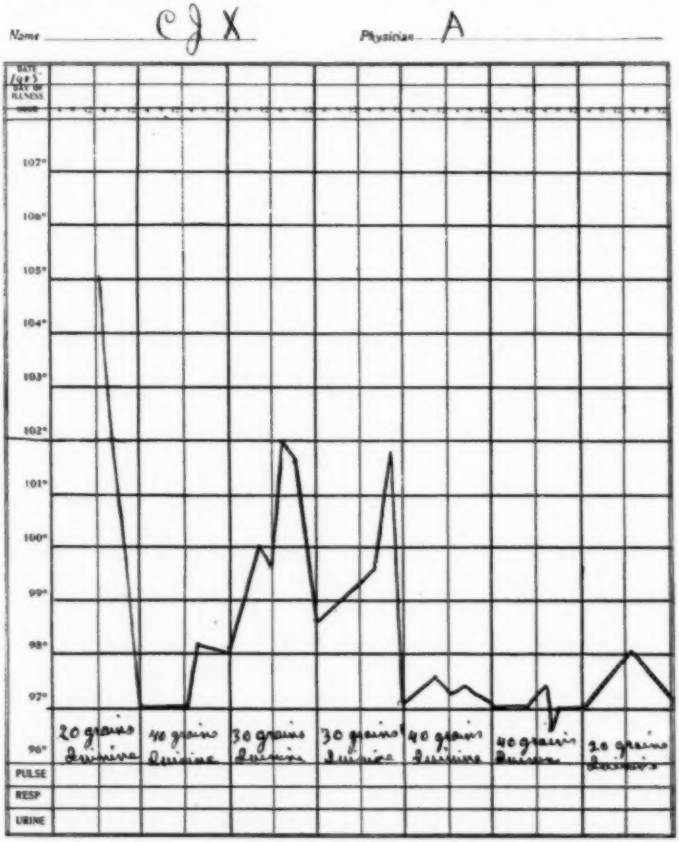
when subjected to either extremes of cold, heat or fatigue. I have never known of a relapse occurring when this course of medication was carried out.

The serum treatment of malaria has not yet been perfected sufficiently to be reliable.

Hygienic.—All measures which add to man's general resistance add to his power to combat malaria. Feed your malarial patient all he can eat of the very best and most nutritious food. Let him bathe every day and be out of doors as much as possible. When not too much cinchonized and after the acute stage is over keep him in the sunshine two hours.

morning and evening, for sunshine adds to the destructive action of quinin on the organism.

Prophylactic.—For all practical purposes there are only two abodes of the hemameba malariæ. One is man and the other is the anopheles mosquito. Malaria can be completely eradicated from any community by destroying all of it in either of these abodes. Cinchonize the individual and drain the breeding places of the mosquito and malaria will dis-



appear. The most striking example of this is found in the German town of Dar-es-Salaam on the east coast of Africa.[1] By sanitation and forced medication they have reduced the prevalence of malaria to the minimum.

When Should Malaria Interfere with Operation? All cases of strangulated hernia and intestinal obstruction should be operated, disregarding the presence of malaria.

[1] Military Surgeon, May, 1907 (Maj. Harris).

All cases of fractures, cuts and lacerations happening to those who are able to be up and about, but who may have a mild attack of malaria, should be treated surgically as though no malaria were present.

Malaria should interfere with operation in all cases of a chronic nature with an impoverished condition of the blood. This is especially true of those cases where there is a doubt as to the patient's ability to stand shock on account of anemia. Under large doses of quinin, such patients improve rapidly, and it may happen that after the malarial symptoms have disappeared the clinical picture may change and the original diagnosis be questioned.

CONCLUDING REMARKS.

1. Patients who harbor the parasite in their blood, but who show no acute symptoms of malaria can be operated without delay and later treated for malaria when the symptoms appear.

2. No temperature either before or after operation can be called malarial unless the parasite is found in the blood. If a temperature arises after an operation and no parasites can be found in the blood, it should be considered as due to sepsis and the proper procedures taken.

3. In our present stage of diagnostic science, malaria is a positive finding and, therefore, a diagnosis by exclusion is no longer permissible.

4. Malaria is a curable disease and quinin is the specific.

DISCUSSION.

Dr. Henry C. Mitchell, of Carbondale:—I dislike to see such a valuable paper as this one just read go by without being thoroughly discussed. What I shall say, however, will be in confirmation of what has already been said.

I have come to look upon cases of operation complicated with malaria with considerable concern, and it has been my custom for the past several years to have the blood examined of all patients operated in hospitals (in operations of convenience) for the malarial parasite, and when found to give the patient antimalarial doses of quinin. In my opinion, many of these patients would go on indefinitely and never develop malaria if not operated upon and the powers of resistance lowered by the shock of the operation. Many of these cases do not develop temperature; but the malarial poison seems to expend its force by producing neuralgic pains at the seat of injury or operation.

Only a few days ago I was called to treat a man who had been kicked by a horse, fracturing the head of the radius and dislocating the ulna backward and also producing a compound comminuted fracture of the lower end of the humerus. I reduced the dislocation and adjusted the fractured bones and put them up in a proper splint. The man suffered excruciating pains, so much so that at the end of forty-eight hours I removed the splint and re-examined the arm, thinking that possibly the nerve had become caught between the fractured ends of some of the bones. The following day, however, the pain was worse than ever. I again removed the dressings under anesthesia and made a careful examination and found the bones in good position, very little swelling, and only half a degree of temperature. I reapplied the splint, but in four or five hours his wife called me up by telephone and said the pain was simply unbearable and that something must be done. Ever since receiving the injury the patient had been taking anodynes for the relief of the pain, but the effect would only last a few hours, and then the pain would return. I went immediately and obtained a specimen of his blood, exam-

ined it under the microscope and found the plasmodium. I at once ordered five grains of quinin given every two hours until twenty grains had been taken. After giving the third dose the pain entirely subsided and the patient slept for ten hours and was never again troubled with the slightest pain, only soreness. I could enumerate many cases that I have treated that ran parallel courses with the one just mentioned.

Dr. John B. Murphy, of Chicago:—I feel that this is too important a paper to permit it to go by without complimenting Dr. Aderhold on the presentation which he has made to this Society and the important points which he has made of concluding that the fever is not of malarial origin unless the micro-organisms are present. One of the errors too frequently made in the diagnosis of these acute infections associated with chills either before or after operations is to attribute the infection to malaria, particularly the cryptogenic types of infection and the infections that occur in association with the zones that are richly supplied with lymphatics, or the rich capillary zones.

The diagnosis of malaria, as the essayist has emphasized and called our attention to in the first section of his paper, in connection with cholelithiasis, is one of the most common and dangerous errors of this class—that is, a chill and fever unassociated with pain are usually called a malarial chill and fever, particularly when periodic in character, as is common in infections of the cystic duct and in infections of the common bile duct. The cases go on from year to year; they are treated for malarial chills with large doses of quinin, when if carefully analyzed may be recognized as of a different character from those that occur in connection with malaria. The patient may have one chill in twenty-four hours; sometimes he may have three chills in twenty-four hours. Again, there may be an interval of two or three days, or as many weeks or months, with the temperature remaining practically normal, and still it is a septic fever.

The other type of chill is that which occurs following operations on rich vascular areas as the corpus spongiosum or the subcutaneous angiomata of children. A mild infection causes an intense chill, with an elevation of temperature, which may continue for days even after operating on an angioma not larger than a nickel.

With reference to cryptogenic infections occurring after mild apparent trauma, and which cause chill and fever, I wish to cite one case that came under my observation at the Presbyterian Hospital. The patient, an Italian, had toothache; the tooth was extracted. There was no trouble for the next two days. On the third day thereafter he had an intense chill, but practically no pain or inconvenience except when he pressed his tongue to his jaw. The fourth day he had another chill, and following that an acute bronchitis. On his admission to the hospital (fourth day) a blood culture was made and showed pneumococcus. The subsequent course of events proved that he had a classic typic pyemia, the result of a simple extraction of a tooth, with a pneumococcus infection of the alveolus. He began to have pain in his chest with a slight cardiac bruit which increased. On the fifth day we made a puncture of his antrum, withdrew some pus which gave a pure culture of the pneumococcus. On the seventh day he had another chill, followed by a right hemiplegia; after this there was a rapid formation of emboli with infarcts from infection implanted on his cardiac valves. He had gangrene of the right leg, two days later gangrene of the left leg, following day hematuria indicating infarct of the kidney, the case terminating fatally twelve days after the onset. Posstmortem examination disclosed a septic vegetation on the mitral valve which had caused infarcts in his kidney, liver, spleen and occlusion of both iliacs and middle cerebral, all resultant from a pneumococcus infection of the antrum.

The differential diagnosis in this particular case was made on the careful examination of the blood, emphasized by Dr. Aderhold.

We have failed often to diagnose septic cholangitis not associated with pain or icterus. I wish to cite a case which emphasizes this form of infection; the syndrome of recurrent chills, high temperature, sweats, with periods of complete intermission running for days, weeks and months without the association of other symptoms of gall-bladder or gall-duct disease. I saw a patient in Pasadena, California, five years ago last March, who had had chills and fever up to 105° for eleven years. He had traveled all over the world to have these chills and fever treated. He had been given quinin, and occasionally, when large doses were given, the chills and fever would subside. When I saw him, in consultation, they were occurring about twice in twenty-four hours. In the three months preceding a period of two to five days would elapse without chills or fever. Cholangitic infection was suspected. He had never had a colic nor pain. He was carefully examined, and on deep inspiration he complained of a slight sensitiveness in the region of the gall bladder. After opening the gall bladder it was found to contain less than ten drops of pus. The gall bladder was so small that we could not introduce a drain into it. A rubber tube was sewed over the edge of the incision to keep it open. The patient has not had chills or fever since the second day after the operation, which was five years ago.

Calling a disease malaria without differentiating or finding its micro-organism is the most important point brought out in this excellent paper.

Dr. Vincent J. Cohenour, of Joliet:—Speaking of the complication of jaundice and gall-bladder trouble, I desire to say that, while I was in the Spanish-American Volunteer Army, twenty men of our regiment had malarial jaundice or chills and fever combined with jaundice. I had it myself, and there was no pain whatever over the gall bladder. There was malaise and other symptoms of malaria, and there can be no doubt about my having had malaria. About twenty men out of every regiment in Chickamauga Park and other camps had jaundice and malaria. I should like to ask Dr. Aderhold if he considers these surgical cases. Also his experience in treating them.

Dr. G. Frank Lydston, of Chicago:—I did not hear all of Dr. Aderhold's paper, but caught the trend of most of the discussion, and wish to emphasize the importance of making blood examinations in surgical cases where there is any elevation of temperature or chills, whether slight or severe, not only with reference to malaria, but as regards infections in a general way. I have in mind several cases that occurred in my own experience comparatively recently, which emphasize the necessity of making blood examinations in surgical cases.

We have been prone to attribute elevation of temperature and chills in our operative cases to a greater or less degree of sepsis, or, as has been pointed out, occasionally to malaria, particularly in cases that come from malarial districts, and too often we content ourselves with this presumptive diagnosis. Let me recount briefly the cases emphasizing the point of making careful blood examinations in the conditions under discussion.

The first case was that of a woman with renal calculus and abscess of the kidney. I attended her for an attack of severe nephritic colic lasting several weeks, as the patient's friends objected to an operation. The diagnosis was positive and the urinary conditions typical. An *x*-ray examination made by a previous attendant had disclosed a calculus in the kidney. I was unable to gain access to the *x*-ray picture. In the third week I became suspicious that the case was complicated by typhoid, and a Widal examination proved it to be so. I called Dr. Quine in consultation, and he assumed the medical management of the case. I later operated for a double suppurative parotitis, and eventually operated on the kidney and removed a calculus, so that my original diagnosis was correct.

In another case of undoubted nephritis following la grippe, a careful blood examination several weeks later disclosed the existence of a complicating typhoid.

I have now under my care a man, 55 years of age, upon whom I operated for incarcerated inguinal hernia and chronic cystitis. I performed a perineal section for the purpose of draining the bladder. It is six weeks since the operation was done. A blood examination one week after the operation showed typhoid. The study of the blood was made because of a persistent temperature and the knowledge that the man came from a malarial district.

These cases must occur more frequently than has been supposed. They emphasize the importance of careful blood examinations in operative cases where the slightest febrile complication or chill occurs. The plasmodium test in these cases does not prove that quinin will not be efficacious. My experience has shown that the administration of quinin is often effective where the existence of malaria can not be shown by the microscope. The special point I would emphasize is the necessity of careful blood examinations in our operative cases, and particularly with reference to the surgery of the genitourinary tract.

Dr. Edward H. Ochsner:—It has been said that quinin is a bad thing to give in cases of sepsis. I would like Dr. Aderhold, in closing, to state his experience in cases suffering from sepsis and malaria, how quinin affects them, and in what way.

Dr. Aderhold (closing the discussion):—I will by answering the last question first. Two of the cases of general septicemia and one of fracture of the femur, who undoubtedly had sepsis from the start, improved most remarkably under quinin administration, disregarding the statement in the literature to the contrary which I have read. It will also be noticed in the other cases that after the administration of quinin the temperature remained normal, although previous to its administration they had had some elevation of temperature, as most all operative cases do have. I can not say but that quinin is a good thing to give after operation if the patient has a temperature, but the fact that the temperature subsides, I wish to say again, under quinin administration, does not prove that the temperature was malarial.

As to Dr. Cohenour's experience, the only thing which could have been done to him would have been to examine his blood. If that was not done, to this day the Doctor can have some doubt as to what his ailment was. Jaundice usually appears with estivo-autumnal malaria much oftener than it appears with benign malaria. While many diagnoses of malaria have been made without the use of the microscope, yet in all cases where it appears as a complication, or a question arises, there will always exist a doubt in my mind as to the diagnosis unless the plasmodium was found.

In reference to pain in surgical and malarial cases, without temperature, I can remember now a medical case. A mother brought her little child, 2 years of age, to my office last winter. The child had had malaria the preceding year and apparently there was nothing the matter with the child except that it was anemic and cried. It had little or no appetite. The stomach was swollen. Blood examination showed that the case was one of malaria. I have seen young children in whom the plasmodium was not found under quinin administration regain their health, regain their appetite, and return to a normal condition.

All of the operative cases which I have had that had malaria as a complication, pain and everything else subsided under quinin. It seems to act as a tonic and as an anodyne. Of course, quinin may have some action as an anodyne, whether or not malaria is present. Nevertheless it is a good thing to know if a patient has malaria, and it can be given as a tonic if they do not have it.

OPERATIVE INTERFERENCE IN ACUTE MASTOIDITIS.*

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So many papers have been prepared and read on the subject of mastoid disease and mastoid operations during the last few years that it might seem as if we had them *ad nauseam*. However, the disease is such a common one and the results are so disastrous, if the proper course of treatment is not pursued, that we may be pardoned for again bringing the subject to the notice of this important medical gathering. Nearly all the papers during the last few years have been along the line of developing the technique of the classical or radical mastoid operation in chronic mastoiditis. Acute conditions have been disregarded or have been placed in the same category with chronic cases as far as operative interference is concerned.

I assure you it takes no little courage in these days of extreme radicalism in operations to attempt to call a brief halt, to block the wheels of progress, as it were, for a short time, so that we have opportunity to view our surroundings and see if we are not rushing ahead too fast. So almost with trepidation I take up the consideration of a method or operation which our most radical operative otologists class as obsolete or obsolescent, but which, none the less, has stood the test of time and in suitable cases has been of wonderful efficiency.

In the discussion of this subject, I do not wish to speak wholly from the point of view of the specialist in diseases of the ear, but rather from the position of the general practitioner or surgeon who has not the requisite skill or experience to perform a radical mastoid operation, or who is so situated that a competent surgeon is not immediately available. The ordinary operator would stand aghast at the thought of touching the mastoid (a region sacred to the magic touch of the selected few) after he had calmly perused the writings of some of our recent authors on this subject. The array of instruments necessary and the elaborate technique demanded in the performance of this extremely dangerous operation is enough to appall the ordinary mortal.

The radical operation for acute or chronic suppurative mastoiditis contemplates the removal of the tip of the mastoid bone, scraping out of all the cells, opening the antrum, and curetting the vault, opening through the aditus ad antrum, chiseling out the posterior bony meatus, converting all into one large cavity. This cavity must be filled with tissue grafted from the cartilaginous meatus or from the surrounding skin. Such an operation frequently exposes the sigmoid sinus, which is often injured, and it endangers the facial nerve and the delicate parts of the internal ear.

From this brief description it is plain that no novice should attempt such an operation, and it is equally plain that no surgeon outside of the large cities has the technical knowledge and can command facilities for such delicate work.

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Some of our recent authors take the firm stand that in every case of acute suppurative mastoiditis the radical operation must be performed, except perhaps in case of young children. Is this true? Is there no simpler method that offers a fair chance of success and which can be performed by the ordinary physician? Is there no hope for the patients who are away from large centers of population? Is there no encouragement for the general practitioner? Must even the antrum be opened in all these cases? George F. Cott, at a recent meeting of the American Academy of Ophthalmology and Oto-Laryngology, reported four cases of acute suppurative mastoiditis which were cured without opening the antrum. Before I finish I shall report, in brief abstract, fifteen cases of acute mastoiditis cured by the Wilde incision, or Wilde's incision and opening the superficial mastoid cells. These patients ranged in age from 2 to 70 years. I do this fully realizing the extent to which the Wilde incision can be depended upon for beneficial results and appreciating in full its limitations. I do not wish my hearers to misunderstand my position and assume that I consider the radical operation unnecessary or its elaborate technique warranted, or that I consider the Wilde incision in any way beneficial in chronic cases. I am discussing simply operations in acute mastoiditis.

The possibility of opening the mastoid for the relief of suppuration must have suggested itself to the surgeon of very early times, but when we realize that then there was no suitable general anesthetic, or that antiseptics were unknown, it is not strange that nothing was done. The medical treatment has changed little since the time of Hippocrates. He advised leeching, irrigation and the use of astringents. From 1856 to 1864 was the experimental state in mastoid operations. From 1864 to the present has marked a new era. Tangible results have been secured.

Ralfinck, in 1656, and Realan, in 1677, advised opening the mastoid for the purposes of curing tinnitis aureum and catarrhal deafness, but evidently they did not have the courage of their convictions, for nothing was done.

In 1740 Valsalva used a fistulous opening in the mastoid for purposes of irrigation, but he never voluntarily operated. The French surgeon, John Louis Petit, was the first to really artificially open the mastoid to evacuate pus. He used a chisel and mallet and drill. He advised that it be done in cases of caries of the bone. Because his advice was not followed, and the mastoid was opened indiscriminately with the most disastrous results, the operation fell into disfavor. He was wiser than his confrères. In 1776 Jasser, a Prussian army surgeon, noticed that a mastoid abscess in a soldier opened spontaneously and finally healed. When the other ear of the same soldier was affected by acute suppuration he trephined the mastoid and got a communication with the antrum. By irrigation through this opening a cure was effected quickly. This operation was again heralded as a panacea for all diseases of the auditory apparatus, and because it failed it fell into disrepute. Jasser himself really believed that tinnitis could be cured by opening the mastoid. About the same time Wagstrom, a Swedish surgeon, performed the operation so

that he might syringe through the antrum. He failed signally. In 1791 John Just von Berger was operated upon for the relief of deafness and tinnitus. He died from meningitis. Berger himself thought the mastoid operation would cure the deafness and insisted upon having it done. For the next fifty years only a few operations were performed. Webber, in Hannelburg, once in 1824, but the operation was unproductive of benefit. The Jasser operation was repudiated by both physicians and the laity for many years, and mastoid operations were only revived by the advent of the Wilde incision about the middle of the last century.

Wilde's operation was suggested at a time when all operations were stigmatized and condemned. Whatever may be said for or against it as a scientific measure, it was instrumental in disarming hostile criticism and molding public opinion. Between the time of the greatest popularity of the Wilde incision and the publication of the Schwartze method, in 1873, advising the opening of the mastoid with chisels and gouges, numerous instruments were invented for the operation.

Turnbull and Crosby, in America, and Ludwig Mayer, in Germany, each perforated the mastoid in 1864 for suppuration. Crosby, finding no other instrument available, used an ordinary gimlet. Indeed, different forms of gimlets are used up to the present day by a few operators. In 1885 the Schwartze-Stacke operation superseded all others for chronic mastoiditis, and is still the method in vogue with more elaborate details and technic.

Nearly all our surgeons advocated the Wilde incision in suitable cases. Gross says: "Great relief follows early and free incision over the tender mastoid, the knife being made to grate upon the bone."

McBride says: "It is beneficial," and describes the method of performance. It relieves pain by depleting. It can not aid in the draining of the antrum unless the pus has passed from the antrum to the surface of the mastoid.

Gruber suggests it as a local blood letter, advising that the posterior auricular artery be avoided. He advocates keeping the wound open as long as is necessary. If pus forms, an easy exit is offered.

Politzer seldom uses it now. He performed the operation for mastoiditis occurring during simple acute middle-ear suppuration. In such cases the symptoms of mastoid inflammation frequently seem to quickly subside.

Buck reports that he has cured many cases by drilling a half-inch into the bone without reaching the antrum. The cure is effected by the action of the wound in the bone. He uses Wilde's incision in all cases where he thinks the disease can be aborted, relieve pain or evacuate pus. If relief does not come in a few days, the cells should be opened.

Schwartze nearly always performed the Wilde operation first in acute mastoiditis. If the conditions were not then relieved he removed the mastoid cortex.

Dench is not in favor of the incision. Says it acts simply as a blood letter and relieves tension. Says a general anesthetic is necessary because

of the pain. Internal incision is fully as efficacious as the Wilde, but neither are satisfactory.

Thus we see that nearly all the conservative men use the incision, but with proper limitations. All concede to it a proper sphere and recognize its advantages. It remained for Prof. Frederick Whiting, however, in his recent work on the modern mastoid operation, to reach the acme of vituperative abuse in discussing the subject. He is so unreasoning and vindictive in his attack, not only upon the operation itself as an unscientific measure, but upon all medical men who can say a word in its favor, that I was induced to offer these reports in refutation. I will quote briefly from his recent writings so that you may appreciate his attitude in the matter.

Whiting: "The historical interest which invests the evolution and development of any modern surgical measure must always remain a connecting link between the obsolete practices of antiquity, which now excite only amusement or disdain, and the most recent and remarkable technical results.

"Probably no surgical measure which had its foundation upon such frail surgical and anatomical supports ever enjoyed the distinction of a vogue so popular and prolonged as the Wilde incision, and as astonishing as it may seem it is none the less true that during the recent session of an Otological Congress this obsolete method of practice was still advocated as 'an efficient remedy for suppurative mastoiditis, and that its partisans were not merely an insignificant minority was afforded by a general and acrimonious discussion.' 'The only legitimate field for the Wilde incision was in the periostitis and mastoiditis of children.' Cortex was thin, osseous structures soft, and pus could find its way to the surface and could be evacuated by the Wilde incision. Sclerosis often followed in the healing process.

"The service of the Wilde incision was moral rather than surgical. It disarmed criticism when mastoid operations were stigmatized. But those who insist upon still prolonging its vogue should reflect that the measure was conceived in error, nurtured in complacent toleration of its utter inadequacy and is being perpetuated in obstinate disregard of the fundamental principles of surgery.

"As a general proposition we may affirm that whenever Wilde's incision is indicated a mastoid operation is imperative. I have had little success with it. Some cranial complications resulted because it did not gives the relief expected.

"As a surgical measure it is simply a makeshift, an imperfect substitute for the mastoid operation and ought long ago to have been abandoned; but, like Banquo's ghost, 'it will not down,' and we are ever and again flouted by this turbulent specter, irritating to the progressive and scientific mind and of direful import to suffering and defenseless humanity.

"An operation for the timid and sloathful practitioner. It required no skill or precision, but at the same time it made a profound impression on the mind of the patient and thereby exalted the dignity and impor-

tance of the doctor, flattered his self-esteem and incidentally accrued to his financial advantage."

It is a good thing for humanity that we do not all think alike. One physician can not see anything good in a plan of treatment or an operation, because his bent is in another direction; another will follow the same plan of treatment and because of his accuracy of detail and enlarged patience will achieve the most satisfactory results. The distinguished author above quoted should not have characterized the operation as fit only for the tired and sloathful, or that it was performed simply to impress the minds of the patients and exalt his own dignity and flatter his self-esteem or incidentally to fatten his pocket book. Such language should be beneath the dignity of one who assumes to excel in scientific achievement. It is an insult to the whole medical profession. To revile a surgeon who used a simple method when it had proven to be efficacious, because he had not reasoned out a complicated one, is the height of absurdity. As well might we berate our great surgeons, Gross or Pancoast, because they never performed a gastroenterostomy. There are "fads and fancies" in medicine and surgery as well as in any other vocation. We have passed through the fads of curing hysteria by removing the coccyx, nervousness by circumcision, or removal of the ovaries or extirpation of the uterus. For several years half the patients one heard about had floating kidneys which had to be anchored. The "fad" has passed and the operations now occupy their proper spheres. Many supposed obsolete methods of treatment and operation have been revived of late years. They had never lost their efficiency, but had been covered by the avalanche of new and untried methods. A hundred years from now probably some unreasoning and misguided individual will deride us for the crudeness of our thought and methods of procedure, when we fain would consider ourselves fairly scientific.

"By their fruits shall ye know them." I give below a brief account of fifteen cases of acute mastoiditis, many of which had gone on to suppuration long before I saw them. All of the patients were subjected to the Wilde incision. There was complete recovery in every case, and there was but one trifling complication, viz., the cutting of the posterior auricular artery, which caused no bother aside from a quite severe hemorrhage until it was controlled by packing.

CASE 1.—Baby G., aged 3. Has had several attacks of earache and discharge from ear for four months. Right ear stands out from head. Red and painful. Discharge from ear. Slight increase in temperature. At first visit ordered antiseptic douche for ear. June 1 child fell and injured swollen ear. Parents averse to operation, but, as no appreciable improvement occurred in two weeks, Wilde's incision was made under general anesthesia. Large quantities of thick pus was evacuated. Wound packed. Removed packing on following day. Slight discharge of pus. Moist dressing was kept up for a couple of weeks.

Final recovery. Case was seen but five times.

CASE 2.—C. P., aged 5. Saw case first Feb. 15, 1900. Had acute coryza. Closure of Eustachian tube. Purulent otitis. Pain, etc. Local antiseptic ordered, used by parents. Case reported well in a few days. March 12, 1900. swelling appeared behind ear; no pain. Hot applications ordered. March 15 slight discharge and swelling worse, but general condition better. March 17, 1904, performed Wilde's operation under general anesthesia. Evacuated pus.

Packed wound and kept it open for a few days. Steady improvement followed and in two weeks was completely well. No further complications.

CASE 3.—D. H. D., child, aged 4 or 5. May 11, 1898, called in consultation. Child had had cold in head and discharge from ear, pain and fever. Immense swelling behind ear and extending out to eye. Did a Wilde's operation at once. Large quantities of pus evacuated. Wound packed and allowed to heal gradually. Complete recovery in a few weeks. No return of trouble. General anesthetic used.

CASE 4.—March 21, 1896, first visit. W. P., baby, aged 4 or 5. Was treated for several weeks by a brother physician for ordinary purulent otitis media. Suddenly mastoid abscess developed. Large fluctuating tumor. Great depression. high fever. Child almost comatose. Did a Wilde operation at once. Scraped bone superficial and kept wound open a few days. Fluid would pass from meatus through the mastoid opening. Recovery was complete within two or three weeks. General anesthetic used.

CASE 5.—Robert K., child, aged 3. Saw case first time March 12, 1901. Several days prior mastoid abscess had followed an ordinary purulent otitis media. Usual signs present. Elevation of temperature, restlessness, immense swelling behind right ear. Fluctuation. Wilde's incision immediately performed, and pus evacuated. General anesthetic used. Usual plan of keeping wound open for several days followed. Recovery was complete and satisfactory in ten days or two weeks.

CASE 6.—Oscar E., aged 16, student. Saw case first Jan. 22, 1901. One visit. Mastoid abscess had existed for three weeks and followed a cold in head and purulent otitis. Jan. 22, 1901, performed Wilde's incision under local anesthesia (eucain). Pus easily evacuated. Wound had to be dressed for two weeks. Wound healed completely. No discharge from ear in three weeks from time of operation.

No recurrence or noticeable scar following operation.

CASE 7.—Miss C., school girl, aged 12. March 25, 1894, saw case first in consultation. There was moderate elevation of temperature, but great pain in region of mastoid. Slight discharge from ear, which was previously profuse. Diagnosis of acute mastoiditis made. Advised Wilde's incision, which was at once done under general anesthesia. The relief from pain was immediate and continuous. The wound was kept open and irritated with oleum tiglii for several days. Recovery was complete both as to the otitis media and mastoiditis.

CASE 8.—Baby P., aged 2. About April 14, 1899, had tonsillitis with involvement finally of middle ear and mastoid cells. When I saw the case first, April 20, 1899, the child was almost comatose. There was a large swelling behind ear, side of face was edematous and right eye was closed. Decided to operate at once. Made deep incision into mastoid, opening cortex with scalpel. Marked relief at once. Temperature, which had been 102, fell to normal in a few hours. The wound was kept open a few days and dressed antiseptically. The improvement was gradual and complete within a week or ten days as far as ear was concerned. Severe intestinal indigestion debilitated child for several weeks, however. There was metastatic abscess of elbow before operation on ear.

CASE 9.—E. T. S. M., aged 27. Two weeks before I saw patient, Oct. 26, 1892, he had his right inferior turbinated body deeply cauterized by another physician. Severe reaction followed. Inflammation extended back, involved the middle ear and finally a mastoid abscess developed. This case was severe. There was marked elevation of temperature, nausea and intense vertigo with pain and swelling. Performed Wilde's operation under local anesthesia. Evacuated an ounce and a half of pus. Scraped superficial mastoid cells. Within a week from time of operation patient had fully recovered. The hearing in ear has been diminished, but there have been no complications in fifteen years. I see the patient almost daily in our city and can verify all the results.

CASE 10.—Clem F., aged 30. Consulted me March 19, 1900. Six weeks before this he developed a purulent otitis, with final involvement of the mastoid cells.

Exact time of formation of mastoid abscess could not be ascertained. There was discharge from meatus when I first saw him, but slight swelling over the mastoid. The pain, however, was severe. The ordinary local counter irritants having no effect after a trial of a few days, I performed the Wilde incision in the usual manner, using cocain anesthesia. Pus was found burrowing high up under scalp. There was immediate relief from pain. In ten days the wound was allowed to heal, as there was no further formation of pus. A mucopurulent discharge from the meatus was kept up for a couple of weeks, but ceased under proper treatment. In this case it was possible to inject fluid from the mastoid through the meatus.

CASE 11.—Martin D., aged 35. Saw this patient first March 18, 1904. For several days he had been having severe otalgia, with swelling about the ear. Examination showed redness of the left drum, but no bulging. Inflammation not sufficient to warrant lancing of drum. Advised local treatment to be carried out by the attending physician. On April 1, 1904, swelling of mastoid was quite marked, but there had been no discharge from meatus, nor had the drum ruptured. April 1, 1904, I performed Wilde's operation under cocain, going down deeply and loosening up the periosteum. The relief from pain was immediate, and the swelling reduced quickly. There was no pus found. Within two weeks the swelling had disappeared and all the stiffness of neck was gone. This case must certainly have been one of those unusual ones of primary mastoiditis.

CASE 12.—Mrs. L. J. D., aged 25. First saw case Feb. 24, 1896. Three weeks prior had purulent otitis media. Discharge suddenly ceased and three days after mastoid abscess developed. Performed Wilde's operation under local anesthesia. Scraped superficial cells. Recovery was rapid and complete. This patient had been kicked in the face by a horse prior to her coming to the hospital. Her jaw was broken and side of face badly injured, but no connection could be traced between the mastoid abscess and the injury.

CASE 13.—O. E. N., aged 35. Consulted me March 19, 1905, for mastoid abscess. Had been under treatment with another physician for ten weeks for discharge from ear. Suddenly the discharge ceased and a large swelling appeared over mastoid. I did a Wilde operation, using cocain anesthesia. No pus was reached at time of operation, but two days later it flowed freely. In this case the pus had burrowed deep in the tissues of the neck. Operation done March 22, 1905. With antiseptic dressing and syringing a cure was perfected in four or five weeks. There has been no return in two years. In this case fluid could be forced through meatus from external opening in mastoid, indicating severe destruction of the cells and cortex. No recurrence in two years.

CASE 14.—J. K., aged 70. Two months before I saw patient he was taken down with double lobar pneumonia, complicated with purulent otitis. A month before I saw him a mastoid abscess developed. The swelling extended down the neck. There was a profuse discharge from the ear which could be increased by pressure from the outside. This patient was too debilitated for a general anesthetic for the performance of a radical operation. So I decided on a Wilde incision, opening the parts freely. This I did under cocain anesthesia. Large quantities of pus were evacuated and immediate relief was given. I had to go down two and a half inches before pus could be located. Antiseptic fluid could be injected into middle ear through incision in neck, showing necrosis and breaking down of cells. This case made a rather tedious recovery because of the involvement of the tissues of the neck before operation, and also because of the debility of patient from pneumonia and cardiac disease.

CASE 15.—Mrs. G., aged 75. For two months before I saw her she had periodical attacks of slight discharge from left ear, with intense pain in ear, neuralgic in character. Temperature irregular. Fluctuating from normal to 102. There was great debility. On my first examination the ear drum could not be seen. The meatus was swollen and boggy, especially the upper half. The mastoid was slightly tender, but there was no swelling. Because of the great age and debility of the patient a general anesthetic could not be used. I followed an expectant plan with counter irritation for a few days without success. Finally I made a

free incision within the meatus from the drum outward at the superior portion with some relief to patient. A few days later, however, I was forced to make a Wilde incision, loosening up the periosteum freely. Within a few days the antrum evacuated itself of pus through this incision. Within three weeks all discharge had ceased both through the mastoid and meatus. Nor has there been any further trouble in eighteen months.

This paper presupposes that all the usual antiphlogistic measures have been resorted to during the period of purulent otitis media which preceded the mastoid involvement. When it is evident by the sudden cessation of the discharge from the meatus, or its great diminution, elevation of temperature, and severe pain in ear and tenderness over the antrum, that the mastoid has become involved, the most vigorous measures should be resorted to. The bowels should be opened freely and heat should be applied to the mastoid region, in connection with leeching or wet cupping if possible. Cold, according to Ballanger, has no efficacy beyond two hours. If this does not give relief, a Wilde incision should be made. This operation will require a general anesthetic in children under 15, but a local anesthetic will suffice in all above that age.

The incision should be made one-quarter of an inch behind the attachment of the concha, and should extend from near the tip of mastoid upward fully an inch. The scalpel should be pushed through the periosteum and the incision completed in one stroke. In young children more care must be exercised, as the bone is soft and the cortex can be easily cut through. If pus has not already formed, the wound should be irritated by croton oil and kept open with a gauze pack. If pus has already formed and is working through the cortex, the superficial cells can be scraped, and in many cases this effects a cure. If a communication has been established through the mastoid cells and antrum it is possible to irrigate through to the meatus. The lancing of the drum, even though it has already perforated, is exceedingly beneficial both for purposes of drainage and as an antiphlogistic measure. I have not found the incision through the cartilage of the meatus as beneficial as the Wilde incision. It is harder to perform and is exceedingly painful. Then, too, it can not be kept open so easily as the external incision, nor does it offer such a ready means of escape for the pus when it forms.

Ballanger has recently pointed out that there is a great deal of misconception as to the way these incisions act in the case of disease. They are more than blood letters. They increase the inflammatory process, encourage hyperemia and leucocytosis. They are Nature's aids in the production of leucocytes to repel the invasion of the bacteria. They also offer to the pus a point of minor resistance for exit.

If the Wilde incision and the ordinary antiphlogistic remedies fail to give the desired relief, then the cells must be cleaned out and the antrum opened. In such an event the Wilde incision can be utilized for the more severe operation. I have never had occasion to do this nor have I had any complications, such as chronic otitis media or disease of the meninges, follow in its wake. So, in conclusion, let me say that there is a legitimate surgical field for the Wilde incision, as I have shown by the fifteen cases reported. Naturally it has its limitations of usefulness

and should not be pushed beyond those limits. It has no efficiency in chronic mastoiditis and should not be resorted to in such cases. Such cases demand a radical operation, and such operation should not be attempted by any one who has not repeatedly gone through the elaborate technic on the cadaver. The radical operation, however, should not be resorted to until it is evident that milder means will not prevail. The benefit to the patient should be the main consideration.

DISCUSSION.

Dr. F. G. Stubbs, of Chicago:—As the writer of the paper has said, Wilde's incision, like Banquo's ghost, will not down; but, it seems to me, after listening to the paper and to the recital of the cases in detail, the reason is self-evident. That this treatment was resorted to either as the result of mistakes in diagnosis or else from the surgeon's dread of the necessary operation. If the anatomy of the mastoid was gone into, it would give us a cue as to the reason why incision external to the mastoid cells would not avail. In all cases of inflammation of the middle ear we regard it as a fact that the antrum and aditus ad antrum are involved at the same time as the middle-ear cavity, called the tympanic cavity. They are simply compartments of one general cavity and necessarily the inflammatory changes involve them at the same time, though they may be more marked in one than in another. There is always tenderness on deep pressure around the neighborhood of the middle ear. Many times this symptom can be elicited on pressure over the bone as well. But the cases which go on to suppuration of the mastoid cells arise from the fact that the infection has extended into the cells from the antrum. There is swelling of the lining of the channels leading from the antrum to the cells, the pus can not escape through the antrum, and we have an abscess under pressure, an empyema so to speak. Under this pressure there is first a destruction of the soft parts, the lining of the cells, and if we wait long enough a necrosis of the bony walls themselves. No general surgeon would think, for a moment, of relieving a case of acute osteomyelitis by making a superficial incision over the bone involved, nor should the otologist do otherwise with a similar condition in the case of an abscess in the mastoid cells. The reader spoke of the Wilde incision as though it would avoid the necessity of doing a Stacke-Schwartze operation. I think that in itself shows his misconception of the nature of and the necessity for doing a simple mastoid operation. A radical mastoid operation (Stacke-Schwartze) is one that is done for an entirely different cause, and that is almost always for chronic suppurative otitis media. But from the title of the paper we are dealing with an entirely different thing, pus in the mastoid cells. If we have pus there it must come out, either externally or internally, and it should be our aim to see that it comes externally and promptly. No superficial incision will do this. If the incision finds pus it must be carried on into the cells and all necrosed bone removed. The mere fact that the patient got well after a Wilde incision proves nothing. As I said before, we find many times this tenderness over the bone in cases in which simply the antrum is involved and the mastoid cells not affected. If, instead of making Wilde's incision, you make a free incision through the membrana tympani and take means to limit the degree of inflammation in the antrum you would have better results with no external operation which was not needed.

Dr. Arthur Mario Brianza, of Chicago:—I wish to say that a paper on this subject is misleading to the general surgeon. I claim that in a case of true mastoiditis we can not reach the seat of the disease through a simple incision. I presume, from the description of these cases, that the mastoiditis had gone on to degeneration of the wall of the mastoid cells, so that with a lancet one could pierce the bone very readily; but when that stage is reached it is too late to do a mastoid operation. A mastoid operation must be done before that, to eliminate all danger of it. If we allow the disease to go on until softening of the bone takes place, and then go in with an ordinary lancet and make Wilde's incision, it may

do in some cases, but we generally lose the patient. It requires more than the ordinary scalpel to enter the mastoid cells, and when they are infected it is necessary to go in and open them up. It is not necessary to make a radical operation except in long-standing cases of tubercular osteomyelitis of the bone. In those cases we must do a radical operation; but in acute cases of suppuration of the mastoid cells, where the external wall is stronger than the other, you are liable to have a meningitis previous to the discharge of pus from the Wilde incision.

Dr. Ryan (closing the discussion):—I expected to get some criticism of the view I advanced in my paper, but I am very sorry, however, that I was unable to finish it. I overran my time and had to leave out a good deal of the paper.

I understand the pathology of mastoiditis and all the conditions accompanying it; but if the gentlemen will remember I simply took a stand against the attitude of those who claim that in every case where Wilde's incision was indicated a radical mastoid operation was imperative. I also stated that if the cases were not relieved by Wilde's incision, then it was necessary to do a radical operation. Speaking of a radical operation, I tried to point out that a great majority of men throughout the state were so situated that they could not command the facilities for doing a radical operation, and I have shown by the reports of these cases that there are a great many of them that can be relieved and absolutely cured by a simple incision. If I am wrong in that, all right. I have simply given that as against the statement of Whiting, who says that a radical operation should be performed in every case. In complicated cases I admit that the Stacke-Schwartze operation should be performed.

OTITIC BRAIN ABSCESSES.

A REPORT OF THREE CASES.*

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In presenting this paper and the report of three cases to you, I do so not because I have anything new or of great importance to offer that will assist you in the future management of similar cases, nor do I expect that it will in any way fill in the gap that seems to exist in the surgery of otitic brain complications, but I do present them because I believe that every case of otitic brain abscess, whether successful or fatal, should be reported to assist in completing accurately statistics of a literature which, although not neglected, has only begun to receive the systematic attention it deserves, since Macewen drew aside the curtain in his treatise, "Of Infective Diseases of the Brain and Spinal Cord." Intracranial surgery has advanced until to-day there is a marked improvement in the prognosis of a disease that only a few years ago was universally regarded as hopeless. Fourteen years have now elapsed since this brilliant treatise was given to the world, and since then no great work has appeared to guide us, no brilliant observer has dealt as exhaustively as the array of accumulated facts concerning this branch of surgery would seem to justify, and our advancement and added knowledge has come from individual case reports, they in themselves being of the greatest value to us, but lacking in detail as to pathology and surgical technic.

The three cases that form the basis of this report were all cases in private practice, were operated on under the best of conditions at the

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St. Francis Hospital, Peoria, and comprise all the brain abscesses upon which I have operated, each being performed under essentially similar conditions as regards surgical procedure, administration of anesthetic, antiseptics and the like. All were abscesses of the temporo-sphenoidal lobe, two of them following a chronic suppurative condition of the middle ear, the other a result of an acute condition, and in all three cases the operation upon the mastoid and the intradural operation over the abscess was completed at the same operation.

The cardinal symptoms in all my cases, as will be seen from the case reports, were intense and continuous pain, vomiting of a cerebral type, depression with progressive mental dulness, eventually passing into a stage of coma. Case 1 and Case 3 were operated upon during the stage of coma, Case 2 during a period of considerable mental dulness. My surgical technic has been the same in all three cases, with absolute cleanliness both of myself, my assistants and of the operative field. Gloves have been worn, and ether given by the open method has been the anesthetic used, and in no case were we compelled to resort to artificial respiration. The following three cases will explain more fully the above:

CASE 1.—Miss S., aged 6.

History.—The left ear had troubled her since the age of 4, following an attack of scarlet fever. There was discharge during the greater part of the time, which would cease for a week or two. Saw the case first time on Jan. 10, 1905. Examination showed small amount of pus in the auditory canal, with fair size perforation in anterior-superior quadrant, walls of canal swollen, with tenderness on pressure over mastoid. She complained of considerable pain, temperature 101.5°, pulse 92. Paracentesis was performed under chloroform, and the next day she was almost free from pain, with considerable discharge from middle ear, and her temperature had dropped to 99°, pulse dropping accordingly. I did not see her again until January 17, the family physician in the interval reporting considerable improvement. On the 17th I was called hurriedly and found the patient suffering intense pain, with a marked degree of mental dulness, having had one convulsion. The pupils were equal, contracted but reacted to light. There was a marked degree of pain on pressure over mastoid, temperature 99.4°, pulse 102, and operation was advised and accepted. Before the operation was commenced she had had two more convulsions, had passed into almost a state of coma and had had considerable vomiting, forcible in character.

Extradural Operation.—The radical operation was performed under ether in clearing out the diseased mastoid tissues. The antrum was found filled with pus and a considerable degree of necrosis along the roof of the middle ear. After the completion of the operation the cavity was flushed with 1-4000 bichlorid solution, dried and then packed with iodoform gauze, and an incision made through scalp over squamous portion of temporal bone above the external auditory meatus.

Intradural Operation.—A trephine opening was made through the squamous portion and the opening enlarged with bone forceps to about one inch in diameter. The dura appeared ashen in color, but there was no bulging outward. The dura was then flushed with absolute alcohol, dried and a small opening made with a knife, care being taken not to injure the vessels of the cortex which, being forced by intracranial pressure, might lie in close contact. This small incision was enlarged and extended by a fine blunt-pointed pair of scissors, and through the opening a slender, sharp, pointed knife was passed into the brain substance at the fourth insertion in an upward direction about an inch into the brain and lying almost under the upper border of the trephine opening, the abscess was located. The opening through the skull was enlarged by bone forceps and a slender pair of dressing forceps was then introduced into the abscess, the blades gently opened

and about half an ounce of pus and sloughing brain tissue evacuated. A fair size wick of iodoform gauze was then introduced for drainage, a moist boracic dressing was applied and the patient returned to bed. Hot bottles were placed around the patient, a small amount of normal salt solution thrown into the bowels and Credé ointment used.

January 18: Temperature almost to normal, still in a comatosed condition, no convulsions, but vomited twice since operation. The dressings were changed and removal of drain was followed by a considerable flow of pus and sloughing brain tissue, redressed with iodoform gauze drain, mastoid wound found in good condition.

January 19: Evidence of imperfect drainage, still unconscious, removal of drain brought forth a quantity of pus, forceps were inserted and gently opened which was followed by escape of considerable pus and tissue. A tube was now used as drainage, being held in place by sutures into scalp.

January 20: Patient seemed about the same in the morning, but about noon developed convulsions, the temperature rose to 104.4° per rectum and she died before night. No autopsy was permitted.

Remarks.—To what extent is an operator justified in making exploratory incisions into the brain substance in his effort to locate an abscess? And would tubal dressing used from the beginning have proven of greater value than the gauze dressings as drainage? The question of extent of exploration, to my mind, must rest entirely on the previous history of the case and the condition of the patient at time of operation. Abscess of the brain, wherever situated, if not evacuated, is fatal, and, as all non-operative cases die, I believe a carefully trained surgeon is justified in erring on the side of over-operation than that of too conscientious a fear of injury to the patient and thus fail to explore the parts thoroughly. Regarding tubal drainage, I am firmly convinced that the use of such dressing would have drained the abscess better and prevented blockage of the drainage from necrotic tissue which appeared on the third day.

Case 2.—*History.*—Miss A., aged 38. Right ear. Chronic discharge from ear since a girl, has had several attacks of so-called gatherings in head which have broken. Examination at office, October 10, showed considerable discharge from ear, which was foul in odor, with sinking in of superior wall of auditory canal. There was considerable necrosed bone in middle ear, but no tenderness over mastoid. Advised operation, but refused. Did not see her again until November 26, a period of forty-seven days. Had been in hospital during interval under physician's care for low type of fever. At re-examination in my office she complained of considerable headache and pain centered in ear. Condition about the same as when first seen, excepting pain, some tenderness over mastoid and troubled with forgetfulness and some mental dulness. Advised operation, which was accepted two days after the examination when all her symptoms were pronounced, with some gastric disturbances added and progressive mental dulness, temperature 99.2, pulse 80.

Extra- and intra-dural operation November 30, seven visitors, under ether. Radical operation performed. Entire mastoid exposed, cells and antrum found filled with pus and granulations, with extensive necrosis of roof of attic. The lateral and sigmoid sinus were exposed in our efforts to remove all the diseased tissue, and the sigmoid was found somewhat forward. No tympanic membrane or bones of middle ear found, and the tympanic cavity was filled with granulations. In the roof of the antrum there was a fistula opening, leading upward, which, on being probed, drained pus with considerable force. This fistula was opened with a chisel and bone forceps and the skull removed for about an inch, the dura exposed and considerable bulging found. The mastoid cavity was then

packed with iodoform gauze, the exposed dura flushed with alcohol, dried and a slender knife passed through the dura into the abscess. The moment the knife passed dark blood, pus and necrotic brain tissue spurted fully an inch in height. Forceps were then used to enlarge the opening and brought forth an astonishing quantity of abscess contents. Tubal drainage was used in this case, the tube being stitched to the scalp to hold it in place, and a large moist dressing applied.

December 1: Patient considerable better, mental dulness clearing. Pain only on pressure, but a continuation of gastric disturbances, temperature normal, pulse 78. Dressing changed, followed by quantity of dark blood and pus. Tube reinserted and calomel given in divided doses.

December 2: Improvement continued, although slight increase in gastric disturbances, due probably to the calomel. Dressings were changed and a small cerebral hernia was found protruding from the opening in the dura above the tube, with some granulations. These granulations were cauterized, the mastoid cavity repacked and the tube left in place, as drainage was fairly good and on account of the presence of the hernia. Temperature and pulse the same.

December 3: Patient continued to improve, condition of hernia about the same, gastric disturbances almost gone, bowels moving freely. Dressing changed, tube not disturbed and granulations again cauterized.

December 4: Same improvement, mental symptoms and gastric disturbances gone, lessening of discharge with some shrinkage of hernia and beginning of the disappearance of granulations. Tube removed from fear of obstruction, but was replaced for drainage. Mastoid cavity repacked. This daily procedure was continued until December 7, when, the hernia having disappeared and the discharge considerably lessened, iodoform gauze was used in place of the tube for drainage, and on the 10th, the discharge having ceased, under ether, the mastoid wound was closed, and the patient left the hospital on the 20th in good condition.

Remarks.—This case is interesting for two reasons—first, because of the small degree of mental involvement present when the size of the abscess and the quantity of pus discharged is taken into consideration, which may be explained partly by the fact that the abscess was of the chronic type whose rigid walls did not yield to the collapsing pressure of the surrounding brain, and, second, because of the rapid shrinking of the small cerebral hernia which protruded and which disappeared by the seventh day, probably being incorporated with the scar tissue.

CASE 3.—Master M., aged 18 months.

History.—Left ear. Began two weeks before operation with pain in left ear, child extremely restless, cried considerably and, according to parents, had high fever until the fourth day, when a little discharge was found coming from the ear and the pain and fever were reduced. This improvement was continued for a number of days, when he grew rapidly worse and was seized with convulsions, two seizures, and passed into a state of coma. Another physician was then called into case and found the child in a state of coma, cervical muscles very stiff, head thrown back, and child showed signs of considerable pain on pressure over mastoid, temperature 103.4°, pulse very rapid. I was asked to see the case, and on examination found considerable pus in the auditory canal which seemed to bubble through from the middle ear, swelling of skull over mastoid and a pronounced swelling over squamous portion of temporal bone. The child was in a state of deep coma, with retraction of cervical muscles, and both pupils were dilated, and there was a slight muscular twitching, and the parents reported some vomiting before stage of coma was reached; temperature, 99°, pulse 108. A diagnosis of infectious meningitis, due to brain abscess was made, the parents advised of the almost hopelessness of the case and an operation proposed as the only procedure, which was accepted and the child removed to the hospital.

Extradural operation April 16 under ether, which was given only a few drops at a time. The mastoid was opened and the involvement found very extensive.

The antrum was found filled with pus and softened bone found above and posteriorly. The cavity was then cleared of diseased tissue and flushed with bichlorid solution, 1-8000, dried and packed with iodoform gauze.

Intradural operation. An incision was made over swelling above ear, a ¾ trephine opening was made through the skull, and the dura was found ashen in color, thickened and bulging. From the symptoms, which pointed so clearly to a brain abscess, it was expected that one would be entered at the first incision. The dura was opened with knife and scissors and as many as fifteen exploratory incisions made in all directions without locating the abscess. I did not feel justified in exploring the brain further, and the dura was replaced and a moist dressing applied, the external wound being left open, and the child returned to bed and an ice pack placed to the head.

April 17: Patient seemed in same condition. On removal of dressing, pus was found on gauze, and a cotton-tipped probe was passed through dural opening and pus discovered coming from an upward and backward direction. A small tubal drain was used, placed in direction of pus and the scalp opening repacked. This was in the morning. During the afternoon the packing was removed and no pus found. Drain removed and intracranial end found covered with pus. A slender pair of forceps was introduced in direction of pus, opened considerably and a good size tube introduced between the blades for drainage. No anesthetic given, as patient was in deep coma.

April 18: Considerable pus found on gauze and in tube, which was not disturbed. Patient about the same, except beginning running off of bowels and increased muscular twitching.

Evening: Patient worse, twitchings were almost constant and every sign of approaching death present. The packing was examined and found covered with pus, which was changed. The child died during the night. Autopsy refused. Bacteriologic examination, mixed infection.

Remarks.—Here, without question, to my mind, was a case of meningitis, due to brain abscess, which, in turn, was due to a suppurative condition of the middle ear. Clinically, according to Smith, we distinguish between epidemic, suppurative, tubercular and serous meningitis. Meningitis from aural disease differs from that due to other causes chiefly in that the symptoms are more severe and may be relieved by operation. Here we had the rigidity of the muscles of the back of the neck and retraction of the head, with convulsions and muscular twitchings and a deep stage of coma, and the condition of the patient, with the pronounced swelling over the temporo-sphenoidal lobe, was indicative of brain abscess to both Dr. Parker and myself. Here, again, the question is asked regarding exploratory brain incisions or punctures. The abscess was not located at the time of operation, although careful search was made in all directions. We know that the abscess was there, because pus drained through the dural opening within twenty-four hours, and on placing tube for drainage in the direction of pus considerable was drained before death of patient, yet fifteen exploratory incisions did not find evidence of it. Could the encephaloscope have located it?

Conclusion.—Surgical interference in brain complications due to ear disease is unsatisfactory in a large percentage of cases. This is chiefly due to the fact that the symptoms and serious condition are not recognized until the focal symptoms have become established and the meninges involved. Brain abscesses have an unknown (as to time) beginning and many develop from diseases of the tympanic cavity that are regarded as

simple and not serious. All discharging ears should be considered serious, and the first step in the treatment of any brain complication from ear disease is the prompt diagnosis and treatment of the first discharge.

THE MENTAL ELEMENT IN HEALING METHODS.*

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In 1866 I heard Prof. Austin Flint say: "Gentlemen, there is much more in the practice of medicine than the administration of drugs." The truth of this statement appears from a notice of the drugless methods that have prevailed in time past and are in vogue to-day. The record discloses the most amazing credulity of our ancestors, remote and near. The laying on of hands, the touching of sick with religious rites, or an appeal to the supernatural to drive out the devil of disease, fill a large place in the doings of mankind. St. Augustine healed a sick man by the laying on of hands. Edward, called the Confessor, in the tenth century, was the first to cure scrofula by the royal touch. Consciously or unconsciously, medicine men and priests have availed themselves of facts observed in the working of the human mind to accomplish cures or attest a belief in miracle or dogma. Men still wander after strange gods attracted by the spell of marvel and mystery. There is in human nature an unspoken reverence for the unusual and wonderful; we can always believe what we want to believe, and sick men are what they have always been, easy victims for the unscrupulous and pretentious. If only the qualities of the healer or preacher be dominant enough, he will find the fields white with harvest.

Each and every sect has cured its thousands, and can produce their testimony to the fact. People still journey to shrines and to the French Grotto at Lourdes to plunge in its dirty water and be cured. They use all the contrivances of metalo-therapy cult, electropoise, electric belt, magnetic soles, etc. The success of these drugless pathies and cults is astounding, but the explanation is easy. They all claim a working formula of their own; they hold aloft a banner with the strange device, "Excelsior;" but they are all birds of the same feather. It is the mental element in them all that makes for success. The law of suggestion or an appeal to the psychic and emotional element in our nature is the basis of some of the cures in regular medicine, and all the cures in mental sciences and faith cults and prayer cults, shrine cures and Christian Science. The giving of drugs suggests certain results and the attitudes and words of the physician contribute to the end in view.

The mental healer, who advises his patient to relax himself into a receptive mood and allow certain supposed forces to radiate through his body, suggests to him an actual result. He lays his hand upon the afflicted part of his patient's body, and by act or word or thought is able to suggest to answering cells in his brain that a marvelous influence emanates from his touch. In all this diversity of practice from those who

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lay claim to supernatural power to the physician who gives a placebo, we can discern a real philosophy, which is, that one mind may control another to aid the self-repairing powers of Nature; that real physical changes can be wrought by mental influences; that pain may be relieved and disease controlled by tactful suggestions.

People do not get well simply because they are told to get well, but because a certain influence is brought into action and a corresponding result ensues. It may be much of a truism to assert that mind controls bodily function for better or for worse. We have always assented to this truth, but faintly comprehended it in a therapeutic way. To-day the statement seems to have a larger meaning. The phenomena of psychical research have opened a mine of veritable wealth for many a novelist; it is the foundation of all so-called "New Thought" literature of the day. Along with the progress made in the pathogeny and therapeusis of disease, we are coming to better appreciate that vagaries of mind and psychical facts have much to do with physical ills, and that the ideal environment of the sick man is one that ministers to his hope and tranquility of mind. Now, we allow that men of dominating mind and positive force of character are able to use the facts of mental therapy for their patients' good. Observe that they do this by persistent appeal, by persuasive control of the patient's mind, to the exclusion of all ideas contrary or adverse to the one presented.

In a considerable number of cases in the practice of all, it is impossible to divorce the psychologic from the pathologic. Ever and anon the problem presents itself, how shall we hold the undivided attention and faith of the patient so as to direct bodily function and molecular change in the direction of health. More and more the thinking part of the world is beginning to understand that the subtle ethereal current of a thought wave is the most prevailing power in Nature.

Some students of the chemistry of thought assert that measurable changes can be produced in the secretions and excretions of the human body by an effort of the will; that certain activities of mind pertaining to the emotions, such as anger, jealousy and hate, result not only in anatomical alterations in cell and tissue, but that they furnish definite and deadly products which, precipitated and injected into the veins of a guinea-pig, will cause its death. If this be true, it follows that physiologic processes of health and disease are psychologic and can be altered by mental processes.

How often we have seen a patient convalesce from some long and critical illness and then honestly reflected upon the doubtful value of drugs and the substantial aid of a strong will or hope or faith that held its grip in the contingencies of the future, till the ship of life outrode the storm.

The study of mental conditions and the working facts of mental philosophy have eliminated the probability of most of the reputed miracles in the church and out of it. It has banished much of superstition with its imaginary harpies that have terrorized the lives of men. What was once attributed to agencies of an occult nature and the exploits of

wandering spirits is now known to be the result of one intelligence acting upon another or upon its own bodily functions.

The condition that obtains in the subject of suggestion, who yields himself to the control of an idea, is the same in kind, though not in degree, as that in the person hypnotized. It stops short of profound sleep, but is effective in the same way; indeed, it is said that hypnotists in the case of some subjects find their suggestions as effective during the waking hours as during sleep.

The cause of suggestibility seems to lie in a strong concentration of attention upon an idea, which appeals to centers of the brain, and which often leaves the subject without normal control of his faculties, and so incapable of sober judgment. This is a common occurrence in every-day life. You meet a beggar who solicits alms. If he knows his business, he may appeal to some group of cells in your brain with such convincing force as to put all other groups of cells out of commission. Pity stirs you, you can think only of the poor plight of this beggar, you feel like giving to every beggar you meet; but other thoughts intervene, you remember that beggars are sometimes frauds, and this may be one—so you hesitate. Some orators and preachers, some church beggars and stock grafters, and salesmen possess this power of appeal or suggestion in an unusual degree. The tones and modulations of voice conquer you as surely as Cæsar conquered Gaul. A striking appearance, a pleasing manner, is irresistible. Now this idea of succession of thought, through a harmonious contact of mind with mind, is interwoven in all our conception of men and things; it is the normal habit in public and private life; it is the wheel on which progress makes its way; in the reforming of character, in the practice of teachers and moralists, or in those wonderful transformations of character, under the influence of some terribly earnest man, who fills the mind of his hearers with the stir of fearful emotions, with solemn conceptions of life and duty. In times of epidemic and pestilence, it is said that many die of fear and expectation alone. The dying curse of some victim of unusual wrong has followed its perpetrator to the grave, and the imprecation of many an old witch has proved the faithful prophecy of retribution. A nun, in a freakish way, commenced to mew like a cat. Presently all the nuns mewed in cat-like harmony till only vigorous measures sufficed to end the concert. Have we not known of some man, in times of riots and mobs, who has risen up before a murderous multitude and with the magic of voice and word stayed its tumult and rage?

One of the best examples of hypnotizing speech occurred in a London court. The prisoner had confessed himself guilty of theft. The judge appointed a rising young lawyer to defend him; this he did with such skill and eloquence that the jury brought in a verdict of "not guilty" in spite of his confession. Thus it is that mind conquers mind as surely as muscle conquers muscle. For good or ill, the thought of one man takes possession of another to the exclusion of all other thought. Sometimes that domination is so extreme that the subject becomes a crank or enthusiast; one single idea takes possession and runs riot with all his mental

belongings and all rivaling thought. No tyranny is so exacting as the tyranny of an idea. If it be a desire to accumulate, the subject becomes a miser or a thief; if it be a conviction of duty in religion or morals, he is a fanatic; if it be in some imaginary ailment of the body, he needs the art of some controlling mind. And so this trait of human nature, this interdependence of mind on mind is the fertile soil in which flourish all the isms and cults of warped and biased minds. It is at once the strength and weakness of our God-given heritage.

Concerning another proposition, it is obviously true that a state of mind produces a corresponding condition of body. Dr. John Hunter said: "I am confident that I can fix my attention upon a part of my body until a sensation is produced in that part." Many persons can so concentrate their attention upon an organ or part until more blood flows to it; it will measure more in circumference, its sensibility will be increased, and a delicate thermometer will indicate an increased temperature. Dr. Wier Mitchell testifies to this fact.

Ideas precede all emotions, all pain and pleasure. Grief will arrest the process of digestion, anger will poison the secretions of the body, and fear has paralyzed many a heart. The sight of inviting food stimulates a flagging appetite. The mental image of a glass of liquor to a drunkard will provoke an insatiable thirst. Vomiting and catharsis may be produced by the belief that medicine has been taken. Plainly the painfulness of pain is aggravated by the belief that it is destructive or dangerous, and the disagreeableness or disagreeable things largely depend upon our attitude toward them. Indeed, any state of mind or condition of body which is considered imminent and is expected with any degree of confidence is likely to ensue. The agony of death would lose much of its forbidding nature were it not for the continual dread with which we are accustomed to invest it. To the man who wants to die, death has no terror. Only with this view of the entire pre-emption of the mental faculties with an all-absorbing idea can we understand how Dr. Dowie could be sincere in the monstrous doctrine which he seemed to believe, or how it was that martyrs and witches in the olden times attained to a condition superior to pain, while they endured tortures horrible beyond our power to conceive. It is often remarked, "That fellow has told his lies so many times that he actually believes them himself."

Once in the army I was called on the battlefield to attend an officer of the Sixth Regular Infantry who was said to be wounded in the abdomen. Lieutenant Nolan was a brave officer and gave a good account of himself after the war on the plains. I found him lying on his back and unable to move. I found that a ball had simply grazed a line of three or four inches across his abdomen, and when I showed it to him he said: "By Jove, that's so," and then got up and, unaided, returned to the firing line. Some years since I was called to Monroe, Wis., to remove a cancerous breast from an old and reliable patient. She was feeble and anemic, had been in bed six weeks prior to that date. When I produced the anesthetic, she obstinately refused it, because I had previously given it to her, and she had suffered three days from nausea. During the opera-

tion she never once flinched or gave a sign of pain. This was, of course, a case of autosuggestion.

I am told that specialists often die of the same affection which they have long treated; as if, indeed, the group or picture of symptoms, so long constantly before them, had photographed itself, so to speak, upon the retina of their brain, to be reproduced afterward in bodily expression.

Writers upon psychic subjects assume that we have two minds, the objective and the subjective, the conscious and the subconscious—that is two separate entities operative each in its own sphere. The one, the objective, acts through the senses. This is the mortal mind of Mrs. Eddy in Christian Science. It is the mind with which we do the business of life, with which we become conversant with the outer world, and which dies with the body; the other, the subjective mind, which acts through the involuntary and automatic centers of the brain, and is independent of the senses. This is the mind which controls the bodily functions of sensation, circulation, respiration and all the molecular changes of waste and repair, and this is the human soul that survives the body. But this division of the brain is hardly warranted by the facts of anatomy and physiology; for we have not simply a single brain or a double brain, but many brains, unnumbered groups of brain cells, a cell for every thought that ever come out of the soul of man; and these, all bound together by nerve fibers into one harmonious whole and working together in happy accord.

From the cells of this subjective part is evolved our consciousness, all original intuitive thought, all conviction and belief which determines our endeavor and which controls the normal functions of the physical man; and this thought is as much the result of cell activity as electricity is the result of the magnetic battery. What we call life and what staggers our comprehension, from the forming crystal to the organized brain of man, we can not distinguish from thought. As with gravitation, heat, light and electricity, so science seeks to bind the thought of the brain with unseen bonds, to do service for our fellow. It is this subjective, subconscious mind that is constantly amenable to the suggestion of thought, either of the individual or of some other.

I think we are agreed that the larger part of all diseases will get well with any treatment that does not do positive harm, and this class includes most acute and some chronic diseases. Some are diseases of invasion and some are autopathic. Of the minority remaining, and excluding the failures of those who have died or are confirmed invalids, there are those that, in addition to favorable suggestions, receive some helpful treatment. These are common with us all, as with the various one-idea and topical plans of healing. Then there are those which are imaginary, real only to the patient himself. It is sometimes difficult to diagnose an imaginary disease from a functional one. They are often mento-physical—that is, while largely of mental origin, they have a foundation in some obscure cause, such as defective metabolism. They go from one doctor to another and believe in none. They always imagine something of a serious nature, as organic disease of vital organs, and are never known to belittle a

symptom. These, together with the purely imaginary ones, are those that are the subjects of the wonderful cures, bruited far and near. It is easy for the skillful pretender to magnify a slight ailment into one of a very dangerous character, such as an intercostal neuralgia, because of its location, into grave disease of the heart, whose cure will last until the pocket-book is exhausted. Such a patient may at last die, the victim of his own imagination, if not from the infinite harm done by those people whose chief delight it is to rehearse the mournful tale of their own afflictions.

Now as to the manifest value of suggestive treatment as a healing agent, it is sufficient to say that, while it may not be a direct antidote for toxemias or a substitute for the leucocytes, it may so influence the wonderful chemistry of nutrition as to aid them in their work by promoting the virility and appetite of these normal scavengers of the blood. Suggestion is not equal to the emergency of an appendicitis; it can not remove a needle from the flesh, but I have seen it completely banish the pain of it when once the patient believed that it had been removed. A good suggestion always goes with an efficient prescription; sometimes one, sometimes the other, is most available, we are built that way. My partner gives a medicine that proves to be worthless; afterward I give the same medicine to the same patient from the same bottle, and it has a most happy effect. Why? Because of my personal influence. And so I say that the problem of suggestion is, for the most part, one of personality. The natural way to the confidence of the patient is the honest one—the new and spectacular to those who may. There is nothing occult or mysterious about suggestion or hypnotism. It is conditioned upon a personal force in the one and a receptive mind in the other. Personality is the chief factor, which makes for success in all avocations where conviction plays a part. It is the personal equation to be solved in the mental control of patients in order to help vital action and cure disease. I believe more patients are saved by a tactful and opportune suggestion than by all other means. The best life insurance agent I have ever known told me that he had attended Dr. Parkyns' School for Suggestive Therapeutics, as he said, to perfect himself in the art of persuasion.

All the qualities of a forceful personality contribute to the end in view. Self-confidence is one of them, but self-confidence is not egotism. To be self-confident is to believe in one's own ability; to be egotistic is to boast one's own ability. The one is a virtue and attracts, the other repels and fosters detestation.

It was Lowell, who, with the flavor of Irish wit said: "Let us be ever cheerful, remembering that the misfortunes hardest to bear are those that never come." A cheerful way is a valuable asset in any business. It is not taxable or subject to sheriff's sale; it carries with it a halo of sincerity and conviction. The physician may by repetition and insistance impress his thought upon his patient, for of all subjects the sick man is in the most receptive mood. The force with which he does this is a variable quantity with us all. We differ in gift and quality; one with no exceptional ability or attainment easily leaves the impression that he is a very prodigy of human wisdom; while another, well fortified in the literature

of medicine, offends more than he pleases. But what Nature seems to have denied us we can compensate by study and endeavor. When we reflect upon how much the dynamic power of a single thought can accomplish, this ought not to be forgotten in a preliminary and professional training of the student of medicine. It is a matter of practical therapeutics to teach him the cultivation of his own personality, the power to please and convince.

It is often the physician may lay aside the dignity which seems to envelop him and study the attitude of the patient and his point of view. He may study also the art of the Dr. McClures in the country by-ways. He has use for the simple, sterling virtues that have won the hearts of men and women ever since civilization repressed our savage instincts. Sincerity, kindness and sympathy are great things in the equipment of all. But, above all, confidence in himself and his therapeutics is a herald of success. The follower of Mrs. Eddy is no faint heart or hypocrite. He believes in himself and his method, and this belief in a vague and empty doctrine has blazed the way for its triumph.

Day by day the physician is face to face with appreciable forces that spring up in the heart and brain. No man stands in reach of higher or nobler duty in the whole range of human effort. As in other situations of life, he should be a symmetrically developed man "who can stand four-square to all the winds that blow." For with a profound sympathy for human suffering he reaches within the veiled chambers of the human heart, where hope and fear are born, to touch those tremulous chords that vibrate in a thousand tongues and voices as a master sweeps the strings of a harp.

Since the discoveries of Koch and Pasteur we look with high hope on the future of scientific medicine. We wait the time when our aided vision can discern the little pioneers of disease, raiding in bone and tissue, or disporting themselves in the stream of the blood; or when the triumph of the serum therapy shall banish invasive disease forever. May we not learn more of the spiritual nature of man, its condition, its habits, so that the physician shall be an apostle of "Good Cheer" in the physical millennium long foretold: "There shall be no more thence an infant of days, nor an old man that hath not filled his days; for the child shall die an hundred years old; but the sinner, being an hundred years old, shall be accursed."

ILLINOIS MEDICAL JOURNAL

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OCTOBER, 1907.

ACTIVITY IN COMBATING CONSUMPTION.

From all sides come encouraging reports concerning the activity of various organizations and societies in the laudable effort of stamping out tuberculosis. Trade organizations and health benefit societies are recognizing that great sums of money may be saved them by the systematic effort to remedy the prevalence of consumption.

The association of postal clerks in Chicago, recognizing this fact, is about to take means to establish a consumptive colony in the neighborhood of Chicago to which those members suffering with an incipient form of the disease may be sent. Other organizations have combined to establish a system for the treatment of the disease in New Mexico. The intelligent portion of the laity are being rapidly taught the importance of early recognition of the disease and little by little professional men are waking up to the necessity of investigating every catarrhal condition of the nose and throat to determine the possible existence of tuberculosis. The year 1927 has been set for the virtual extermination of the disease in Germany and, while America has been somewhat remiss in taking up this work, it is not too much to hope that the superior intelligence of our people and the thoroughness of their social organizations will be so effective that we may look for a more rapid extermination here than in Germany or any other foreign country.

BUSINESS BUREAU FOR CHICAGO MEDICAL SOCIETY.

[Communicated.]

The growing tendency on the part of medical societies to extend benefits to their members has made especial strides in Chicago. Members of such an organization as the Chicago Medical Society who do not attend council meetings can hardly appreciate the multiplicity of affairs that come before that body for decision and the vast amount of work done by the committees.

The importance of society matters is making it more and more necessary that a central office be established where committees can have the aid of typewriters or keep their papers as well as for the proper filing of the society's archives so that they may be accessible to succeeding committees to aid them in current affairs.

The $5.00 yearly dues of each member has to be very carefully apportioned to cover the present expenses. Each member now has a copy of the ILLINOIS MEDICAL JOURNAL free. A firm of attorneys are hired, at a yearly retainer, to defend malpractice suits. Stenographers naturally are necessary for both the medicolegal committee, treasurer and secretary's voluminous correspondence. The treasurer has even turned back his honorarium into the treasury. With all this there is a growing need for the central offices which will entail further expense.

THE JOURNAL and the defense fund, which latter has now been extended to the state, are proofs of the success of the society and its ventures. The idea of the society defending its members against malpractice or, better, that species of blackmail which has so often harried our ranks, would have been considered a wildcat scheme ten years ago. Not only has this been eminently successful in Chicago, but has been extended to the state.

With the coming winter we have the regulation of dispensaries and other like problems which will cost money.

Other committees, like the external relations and legislation committees, have done much work, paying even their railroad expenses, to say nothing of the time expended.

The time is ripening when the Chicago Medical Society should throw more activity into serving members in good standing and further aiding them in getting their rights.

It would seem that the time has come when the question of the formation of a bureau would be acceptable both to the society as an organization as well as to its individual members.

Much money is yearly distributed among nearly 200 collectors that might go with benefit into the society coffers.

The Bureau Committee has reported, on good authority, that the gross commission on collections for seventy-five doctors in good standing amounts to $5,000.00 gross, or about $66.00 yearly for each doctor, and estimates that, if the whole society patronized the bureau if established, it would yield an income of $26.666 from its two thousand members if the commissions on each member's collections only amounted to $13.33 annually.

With this income the society could do more effective work and extend its usefulness and, what is also of vital importance, gradually reduce the commission charges so that collections could be performed for but little over the cost price, as well as gaining valuable information that would lessen the losses to members and reduce the number of malpractice suits.

DRUGGISTS WANT LEGISLATION.

The National Association of Retail Druggists, at its ninth annual convention recently held in Chicago, has tendered resolutions in favor of legislation to prohibit physicians from dispensing drugs and medicines on their own prescriptions. The subject, which has been of long standing between physicians and druggists, was brought to the attention of the delegates by President Charles F. Mann, of Detroit, in his annual report. With a great deal of what President Mann has said the profession can agree, and it is not too much to hope that mutual concessions on the part of both professions will bring about a great amelioration of past abuses.

President Mann's language is as follows:

"The National Association of Retail Druggists must always stand, as it has always stood, squarely against counter prescribing. It is a practice which is illegal, dangerous and dishonest.

"Much can be done through joint meetings of local societies. The evil practice of counter prescribing by druggists and dispensing by physicians can be minimized and ultimately destroyed by persistent effort on our part."

Resolutions also were introduced urging the delegates to place the association stamp of disapproval on all fake patent medicines. In the matter of preparations bearing a patent name, or trademark, the druggists will urge physicians to prescribe standard U. S. P. preparations whenever possible.

SUNDOWN DOCTORS AND SUNDOWN MEDICAL COLLEGES.

The sundown doctors are a product of the government departments of Washington, who ply their trade after 4:30 p. m. From 9 in the morning until that hour they are holding their noses to the grindstone of government desks. As a rule, these gentlemen do not get away from the government service, never becoming very expert clerks or successful physicians.

A little worse than the sundown doctor is the sundown medical college, and it has been so thoroughly shown up by the Committee on Medical Education of the A. M. A. that we are quite surprised to learn that another such school, yclept Hippocratean, has been started in St. Louis under the leadership of Dr. Emory Lanphear, some time of Kansas City. We had hoped that the night medical school was doomed to extinction, and we still cherish the hope that the profession will refuse to support this new school in St. Louis and that it will "die a bornin'."

YELLOW MEDICAL JOURNALS FROM FRANCE.

Just as the organized profession are beginning to make some headway toward cleaning up medical journal advertisements in America, the United States begins to be flooded with yellow journals from other countries, notably France. Probably the worst offender of this sort is a journal called *Le Monde Medical,* published at 45-47 Rue du Docteur-Blanche, Paris. The English edition, published monthly, is a sort of combination of the semimonthly French edition, and the whole seems to be an advertising scheme for the drug house of Astier, Paris. The United States agents are Fougera & Co., of 90 and 92 Beekman street, New York. Fougera has long been engaged in the distribution of proprietary medicines, and it is not surprising that this company is a party to the distribution of this journal, which seems to us to be the rankest sort of a proprietary publication. No doubt our readers will consign these alleged scientific journals to the waste basket, where they belong.

ASSOCIATION OF INDEPENDENT DOCTORS.

An association bearing this title was organized at the Sherman House in Chicago early in September, with Charles McCormick as president and C. W. Crosby as secretary. It is announced that directors will be selected at the next meeting of the organization.

The objects of the association are announced to be to secure insurance against malicious prosecution, to secure speedy changes in the laws of the several states so as to permit a licentiate to practice medicine in any state of the union, to have members of health boards appointed from all walks of life, and to publish a medical magazine.

The new organization is opposed to the American Medical Association, which it calls "a trust" and attacks in its constitution as "worthless, incompetent and misleading."

IRREGULARITIES OF THE IRREGULARS.

The daily press of the state has, during the past thirty days, been unusually full of accounts of the woes of the irregular practitioners. Among these we note that one Franklyn J. Morgan, a Christian Science practitioner of Chicago, has been sued by his wife, Mrs. Alice R. Morgan, for separation. Mrs. Morgan declares that he has an income of some $3,000 from his practice.

C. N. Maxcy, an osteopath, formerly of Springfield, announces that he has gone west for his health and refuses to be responsible for the debts of his wife.

Mrs. Anna Downs, of Bloomington and Springfield, declared to the court that her husband, Luther Downs, to whom she was married in 1901 and who went to the osteopathic school at Kirkwood, Mo., on her money, has gone off with another women, and she was granted a decree of divorce on the ground of desertion.

UNITED STATES PHARMACOPEIA AND NATIONAL FORMULARY.

The press of the American Medical Association has just issued a physicians' manual of the United States Pharmacopeia and National Formulary, which we think will be welcome by the great body of physicians. It includes the names and brief descriptions of all the articles that appear in both of these books. At the end is a therapeutic index and a list of common names of articles which we believe will be advantageous to busy physicians. Since the line which separates Pharmacopeian articles from those of the National Formulary is in many cases an arbitrary one, this handbook which covers the two series will be of decided value.

With this volume on his desk there will be little excuse for the physician to be deceived by the proprietary medicine man, and it should be found in every practitioner's office.

Correspondence

DEFENSE OF THE NIGHT SCHOOL.

In the report on medical education at Atlantic City the statement is made that all night schools were condemned, and that only about 50 per cent. of all colleges were in condition to teach.

Did they stop to consider that less than 20 per cent. of all the doctors attending the meeting had as good an equipment where he studied as is possessed by the poorest night school?

When one condemns the night school he displays his ignorance of the workings of these schools.

Do they know that the night school was the first to introduce the four-year graded course, and the strongest objection to them came from schools which did not want to extend the time of their classes?

A careful observation of night-school graduates for the past fourteen years warrants the belief that they will hold their own with any in the profession for skill, honesty or business success, and we protest against any effort of would-be leaders to blame the night school for their failures.

CHARLES D. CAMP, M.D.,
Originator of the Night School and the Four-Year Graded Class.

COUNTY AND DISTRICT SOCIETIES

COOK COUNTY.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

A regular meeting was held Feb. 19, 1907, with the President, Dr. J. Holinger, in the Chair.

"Case of Closed Ethmoid Sinusitis," by Dr. H. Kahn and Dr. Mortimer Frank.

"Necrosis of Lacrimal Duct," by Dr. Wm. L. Ballenger.

"Asthma Due to Sinuitis," "Dehiscence of Nasal Bones and Os Frontalis," by Dr. J. Holinger.

"Operation for Chronic Suppurative Otitis Media without Removal of Membrana Tympani for Ossicles," by Dr. Norval H. Pierce.

"Acute Otitis Media" and a "Case of Complete Facial Paralysis Following Cholesteatoma Existing for Years, with Partial Re-establishment of Function," by Dr. Norval H. Pierce.

"Case of Abscess Behind the Ear," by Dr. Norval H. Pierce.

"External Splint for Lateral Deviation of Nose," and exhibition of mastoid cases by Dr. A. H. Andrews.

"Demonstration of Sidney Yankauer's New Method of Operating on Turbinal Hypertrophies," by Dr. H. Stolte.

"Case of Oto-Sclerosis," by Dr. George E. Shambaugh.

"Case of Deformity of Nose from Sequestrum," by Dr. J. C. Beck.

"New Nasal Chisels for Opening Maxillary Sinus, with Brief Reference to Technic," by Dr. A. M. Corwin.

A CASE OF CLOSED SINUITIS OF THE ETHMOID LABYRINTH, WITH EXOPHTHALMOS.

HARRY KAHN, M.D., AND MORTIMER FRANK, M.D.
CHICAGO, ILL.

F. G., a school girl of 14 years, who gives the following history: Father died of tuberculosis; the mother and two brothers in good health.

The patient, during the year of 1904, suffered successively from measles, scarlet fever and diphtheria. In 1905 she had chickenpox, and in 1906 had an attack of mumps.

Following the attack of chickenpox the patient noted a protrusion of the left eye, which as time progressed became more and more prominent. There was no headache, no hydrorrhea, no parosmia, no pharyngeal or laryngeal irritation; in a word, there was no symptom of the subjective variety that could be referred to the nose or to the accessory sinuses.

The ophthalmoscopic examination presents nothing of importance except the exophthalmos. The globe was pushed outwards, forwards and to the inner side of the orbit. On palpation, could be felt the sharp posterior edge of the lacrimal bone, which was driven forwards. Vision, 6/7 and with a $+ 0.50 = + 0.75 \times 90 =$ 6/6. The ophthalmoscopic examination was negative. There was no diplopia, and ocular movements free in all directions. Lids in perfect apposition. Tension normal, and no tenderness or pain on pressure.

Rhinoscopic Examination.—The septum is almost straight. The right side of the nose is normal. The left showed a large tumor-like mass, polypoid in character, in the place of the normal anterior end of the middle turbinate body; it filled the whole of the olfactory space, lying flatly against the septum on the one side and impinging on the external wall on the other.

After the application of adrenalin and cocain, the mass did not shrink, was hard and immovable when tested with the probe; hence a bullous anterior end

of the middle turbinate was diagnosticated. No pus was visible in the nose at any time, nor did the patient give any history of a purulent discharge; in fact, stoutly denied ever having had any such discharge.

The anterior end of the middle turbinate was resected with the scissors and the snare; there immediately escaped a large volume of white, odorless pus, which has continued to discharge to a greater or lesser degree ever since the operation on the 17th of January, 1907. The ethmoid labyrinth was cleaned as well as possible at the time. An opening was made large enough to insure good drainage. The progress of the case has been very satisfactory. The nose is gradually assuming its normal contour, and the eye is returning to its normal position.

This is a case of true closed or, as the Germans name them, "locked" ethmoid sinuitis, with a perforation of the lamina papyracea. That this is the diagnosis is shown by the results of the operation, namely, the finding of pus in spite of the absence of symptoms pointing to its existence, and the return of the eye to its normal position, and argues for a perforation of the lamina papyracea.

The case is presented, not because we believe this condition is an extremely rare one, but we do think that this is an uncommon case, and, further, the case is now of two years' duration. During that time it has been seen by several of our colleagues, by whom various diagnoses were offered, such as osteoma of the orbit, tumor of the orbit, etc. One practitioner sent the patient to a hospital for enucleation of the eye, but at the last moment the patient rebelled and left the hospital.

That the enucleation of an eye is not so uncommon we need but to refer to the paper of Fish, in the *Medical Record*, vol. lxx, page 689, in which he reports five cases of enucleation of the eye in patients suffering from a closed ethmoid sinuitis. From this case and those reported by the last-named author, warning should be taken by the ophthalmologist not to enucleate an eye of this type without first looking into the nasal conditions.

DR. BALLENGER'S CASES.

Girl, 11 years old, had scarlet fever seven years ago, and following this suffered from sinuitis. One year ago there appeared a bulging of the side of her nose, and again last winter. I operated two months ago, and found a large area of necrosis in the region of the lacrimal duct and including the anterior and posterior ethmoidal cells. It was removed and the anterior and posterior ethmoidal cells were exenterated, and the middle turbinal removed. Granulation tissue was removed from the sphenoidal sinus. The other side was operated on in the same manner, but intranasally. The skiagraph showed great density through the ethmoidal region on both sides and absence of both frontal sinuses probably because of her growth. There is still some discharge from the right side.

DR. J. HOLINGER'S CASES.

CASE 1. Bronchial Asthma Cured by Radical Killian Operation on the Frontal Sinus.—Mrs. M., aged 20, suffered from asthma since her fifth year. At her first examination she showed the typical picture of bronchial asthma, which I do not need to describe here. There was a considerable amount of pus in both nostrils, more, though, in the left middle duct. A systematic rinsing by means of Siebenmann's canula of one cavity after another revealed ill-smelling pus in a cavity which was reached by inserting the canula laterally and about one centimeter behind the anterior end of the middle turbinal. The asthma improved and did not bother her throughout the fall and the first half of winter.

Middle of January it appeared again, and we decided to operate radically. On entering above the medial end of the left eyebrow, a large sinus was uncovered, reaching from beyond the right incissura supraorbitalis to beyond the left one, and opened into the right nostril. No pus but thickened lining was found. On removing the floor of this sinus, foul-smelling crumbs of pus were noticed. They were removed, together with the polypoid degenerated lining from a flat deep cavity in the roof of the orbit. Both cavities were drained into the left nostril.

The patient made an uneventful recovery and to-day, two weeks after the operation, you can barely notice the scar. No trace of asthma has shown since, and she feels stronger.

CASE 2. Tubercular Ulcer in Connection with a Congenital Malformation.—An ulcer the size of a penny with undermined margins is located in the skin above the inner corner of the left eye. The root of the nose is swollen and upon pressure on the swelling and on the ulcer a drop of pus appears at a birthmark which is located near the lower end of the nasal bones in the middle line. It looks like an enlarged hair follicle. At the operation the skin was found undermined in all directions from this birthmark. The ulcer was connected with the fistula. The fistula led to a cleft of about one-half a centimeter in width between the nasal process of the frontal bone and the nasal bones. Nowhere could raw bone be felt nor could any communication of the cleft with the surrounding sinuses or the nose be discovered. The wound was curetted and closed. It healed nearly throughout by primary union.

The question of interest is that of etiology. A tubercular ulcer in connection with a congenital fistula, even the fact that the ulcer developed more than an inch from the opening of the fistula, has been repeatedly described. But the cleft in the bone was certainly not of a tuberculous nature, because there was no raw bone in the cleft, no granulations, the lining of the cleft was periosteum. The cleft was not filled with connective tissue; it could not be a scar of a former injury. The only explanation is that ot a congenital malformation. As such it can not be compared with cleft palate which is due to a defect in development along the lines of embryonal clefts, for the simple reason that there are no embryonal clefts in that region. The nose develops as a median protrusion of the forehead. The patient has her own explanation of the birthmark which was given to her by her mother. She says that her mother saw a man with a broken nose during the early time she was pregnant with her.

The question of the effect of maternal impressions upon the child is a difficult one. The present case seems to confirm the possibility of such influences.

EXHIBITION OF MASTOID CASES.

NORVAL H. PIERCE, M.D.

CASE 1.—Man, aged 20, had measles at 7, following which both ears discharged, resulting in chronic suppuration. The right ear has been dry for a number of years, and to-day the patient has a healed perforation of Shrapnell's membrane on that side. The left ear continued to discharge profusely at times, and there has been pain over the mastoid region. The discharge was purulent in character. He could not hear a whisper, and a conversational voice only at two feet in the left ear. The right ear is also affected. On December 26 last the mastoid antrum was opened and the external auditory canal taken away down to the annulus. The aditus antrum and surrounding cells were found filled with a granular mass of tissue intermixed with pus. When this was cleaned out up to the healthy bone, a cavity the size of a filbert remained. The tympanic membrane and the contents of the cavum were not disturbed. A very careful examination disclosed no caries of the ossicles. A reverse Stacke flap was made from the external auditory canal and turned into the cavity; that is to say, as the Stacke flap covers the floor of the cavity left after a radical operation, this that I made covered the roof and was packed in position. The posterior incision was closed; drainage was carried into the external auditory canal, and a wet 50 per cent. alcohol dressing put on. The posterior incision healed, as you see, by primary union. The cavum is now dry, likewise the antrum. There still remains a perforation in Shrapnell's membrane. The man can hear eight feet for voice, and two for a whisper in the left ear.

This operation is especially indicated in cases where there is only perforation of Shrapnell's membrane and the pars tensa is intact, or where there is only a small peripheral perforation in the pars tensa. Where there is extensive destruction of the tympanic membrane, and the ossicles are necrotic or bound down by

adhesions, there is little gained in stopping short of a complete radical operation. In certain cases it will be found impossible to perform this operation, especially in those in which the chronic discharge is kept up, not by a large cavity in the mastoid process, but by a fistulous tract, or where the antrum and aditus are reduced in size by plastic inflammation, or even obliterated, we must, after our attempts at reaching the antrum have proven unsuccessful, resort to the Stacke procedure of following up from the middle ear. There are two methods by which it may be performed. First, in the manner illustrated by the present case; second, by taking away the external wall of the epitympanic space also, yet leaving a rim of bone to hold the tympanic membrane. Attention has been drawn to this operation by a recent article written by Heath, but it is not a new procedure by any means. The results, so far as hearing is concerned, are more successful than those obtained by the complete radical operation, but it is only suited to selected cases.

CASE 2.—Adult woman, admitted to the Policlinic with acute otitis media and mastoid involvement, with swelling at the tip, and a temperature of 102°.

Jan. 13, 1906, the mastoid process was taken away and the anterior zygomatic cells thoroughly cleaned out. Two days afterwards a large abscess appeared in the neck, accompanied by a rise of temperature to 103°. It rapidly invaded the deep tissues of the neck, and was opened just above an inch of the sternum at the point marked by the present scar. Two weeks later the swelling developed on the side of the face. A drainage tube was inserted below the jaw at the point marked by the second scar. The patient was markedly septic; slight facial paralysis gradually came on, together with torticollis, which drew the head well to one side. You see now a woman in perfect health, with full movements of the facial muscles, and no torticollis. Massage of the sterno-cleido-mastoid muscles on the affected side will hasten the disappearance of these conditions which result from suppurative processes in the muscles themselves.

CASE 3.—This little girl was operated on when 5½ years old for an enormous cholesteatoma in the left ear. Complete facial paralysis followed immediately after the operation and existed for four years. At the time of the operation I was convinced that the sequestrum which had fallen in the deeper portions included the facial nerve. Three years ago the facial muscles began to show reaction and, as you see now, the patient can use the muscles quite well, closing the eye perfectly. This case illustrates one of two things, either that the nerve is capable of regeneration after a very long time, or that nervous impulses may be carried to the facial nerves through channels within the trunk of the facial, most probably through the hypoglossal.

In Seppy's Anatomy there is an illustration portraying a branch which goes from the peripheral portion of the facial to the hypoglossal. That this anastomotic action may take place is proven by a case reported by Bezold in which the sequestrum taken from the ear disclosed the facial canal.

CASE 4.—A girl, 16 years of age, was sent to me from Las Vegas, New Mexico. One year ago she had some work done on her tonsils. Three months afterwards she complained of pain in the right ear and over the mastoid region. On inspection, the membrane was found congested. Paracentesis was performed without result. Her condition continued for about a month, when the patient was placed in charge of another doctor. During the first part of July the temperature arose to 100°, with infiltration and tenderness over the mastoid. Her physician did a simple mastoid operation, finding softened bone with some pus. The wound healed kindly, and the patient did well until September, when the mastoid again became infiltrated and tender. Another opening was made, and an immense amount of seminecrotic bone, with a small amount of pus, was removed. The temperature then was 100.5°. Patient did well for two or three days, when she complained of pain and became unconscious at each dressing, but occasionally between times remaining for a few minutes, once for eleven hours, conscious. The return of consciousness was marked by a jerk. After the last operation, while the wound seemed to fill in, it became gangrenous and sloughed. In October she was again

operated on, and only granulation tissue was found. The wound healed kindly; when practically closed, without any warning, the wound sloughed out and became gangrenous. It resisted all treatment; the bone became exposed, and unconscious states have continued up to the present time. There is now a punched-out hole behind the ear. The space is white, with a sprinkling of blackish spots. The white base is made up of a layer of carious bone. If this is scratched, bleeding of the vessels beneath takes place. About the edges of the wound is a slate-colored slough, with a narrow rim of periosteum, the neighboring soft tissues being slightly involved. The skin is not infiltrated, but is macerated from the discharge issuing from the wound. There is no active suppuration, and there is marked anesthesia of the scar and surrounding tissue. I have examined the patient carefully for the stigmata of hysteria and find the classical symptoms all present. She has complained at times of blindness in the right eye, coincident with the exacerbations occurring in the mastoid wound. Syphilis, tuberculosis, carcinoma, may, I believe, be excluded in this case. As the wound began to change in character and showed signs of rapid healing, I have not taken away any of the soft tissues for microscopic examination. I believe that we have here a process which is connected in some way with the hysterical state. Whether it has been produced by the patient's efforts to arouse sympathy by the introduction of substances beneath the dressing or not, I am unable to say, but the fact remains that under suggestion the wound is rapidly healing.

EXHIBITION OF CASES OF RADICAL MASTOID OPERATION WITHOUT REMOVING THE DRUM MEMBRANE AND OSSICLES.

ALBERT H. ANDREWS, M.D.
CHICAGO.

CASE 1.—Miss K., aged 20, a telephone operator, gave a history of chronic suppuration of the left ear since childhood. There were occasional acute exacerbations when she would complain of pain behind the ear and over the side of the head. Pressure on the mastoid elicited some pain, and the transilluminator showed no light passing through the mastoid.

The hearing in the affected ear was good, the whisper being heard about ten feet. Considering this patient's occupation, it was especially desirable that good hearing be preserved. My results after the complete radical operation had only averaged hearing for the whisper about three feet. So I determined in this case to leave the membrane and ossicles, in the hope of securing better results.

Oct. 3, 1904, at the Postgraduate Hospital, the mastoid was thoroughly cleaned out, a free opening made in the antrum and the posterior-superior wall of the canal removed down to the annulus and outer wall of the attic. A Koerner flap was made and held in position by one of the stitches closing the postauricular incision. The wound was packed with iodoform gauze and routine postoperative dressings employed. The method of blowing out the middle ear through the antrum, as later employed by Heath, was not used. The discharge ceased in about six weeks, and the ear has given no trouble since, except for occasional accumulation of cerumen. The hearing is now whisper for about twelve feet.

CASE 2.—P. R., aged 30, electrician, has had chronic suppuration of left ear one year, following ordinary acute otitis media. There is a small perforation in the posterior-superior quadrant, from which a considerable amount of fetid pus escapes. The whisper is heard eight or ten feet. The patient was under treatment during several months, the latter part of 1896. He complained of an uneasy feeling in the side of the head, and had frequent elevations of temperature. An operation was performed Dec. 12, 1906, at the Eye, Ear, Nose and Throat Hospital. Pus and granulation tissue was found in the mastoid. The antrum was opened freely and carefully cleared of granulation tissue. In this case, as in the former, the posterior-superior wall was removed down to the membrane. The same flap was made, and the usual dressing employed. The ear was dry in four weeks and has remained so since. Hearing for the whisper is now practically normal.

Without going into these cases in detail, I will say that I see two contraindications to this method of operating:

First, when disease of the ossicles can be demonstrated.

Second, when a cholesteatoma is present, or when the middle ear, attic or antrum is lined with epidermis.

In cases with hearing less than the whisper for three feet, a careful investigation of the cause of deafness should be made before deciding whether to leave or to remove the ossicles and membrane.

DEMONSTRATION OF SIDNEY YANKAUER'S NEW METHOD OF OPERATING ON TURBINAL HYPERTROPHIES.

ABSTRACT.

Dr. Herman Stolte, of Milwaukee, described and demonstrated, following an especial suggestion of Dr. Sidney Yankauer in New York, the new method of the latter of resection of the hypertrophic parts of the lower and middle turbinated bodies to be followed by a complete surgical intranasal suture of the produced wound edges—from the posterior extremities up to the anterior border—in order to secure primary union of the wound. The new method was demonstrated by the inventor, Dr. Yankauer, already on the 22nd of January before the Academy of Medicine in New York, but was not to be published and communicated to the rhinologists in the *Laryngoscope* until the middle of March. The ingenuity of the method, representing a real progress in surgery, on the one hand, and the difficulty of the technic on the other, fully appreciated by Dr. Stolte when the method was privately demonstrated to him by Dr. Yankauer on the 17th of January, when Dr. Stolte was by chance in New York, evoked in Dr. Stolte the wish to communicate this new method as soon as possible to the Chicago rhinologists by a personal demonstration, especially of the intranasal suture and the use of the instruments in order to make the later publication of Dr. Yankauer's article in the *Laryngoscope* more comprehensible and thus to awake the desire to try the operation as soon as possible, so that the newly gained experience of others would help to improve the technic by individual suggestions. Dr. Stolte had tried the operation in two cases and came to the following conclusions:

"The operation is possible only in cases in which the swell body of the lower turbinated body forms the chief part of the obstruction, to be judged of after the use of adrenalin application. In cases in which the hypertrophic and enlarged bony frame of the turbinate is resting against septum and floor the operation is scarcely possible. Only a full response to adrenalin, giving a consequent free operating field, enables us to operate. A constant and free oozing makes the execution of the intranasal suture impossible.

The instruments so far known for the execution of the first step of the operation and especially for the subperiostial or submucous resection of parts of the bone are too clumsy and need technical improvement in order to shorten the operation. In the meantime Dr. Yankauer devised a very suitable, slender scissor which is so delicately built that it does not obstruct the view, but, on the other hand, possesses the very strong joint of Myles' scissors, enabling us quite easily to cut off the tissues and bone. In order to detach the swell body from the bone, also Freer's straight and curved septal elevators proved to be very useful.

The operation carried out in suitable cases represents a great progress in nasal surgery, as resulting in primary union within three or five days, it does away with all the numerous annoyances and drawbacks (secondary hemorrhage, infection, suppuration, granulating wound surface, very prolonged healing process resulting in the formation of cicatricial tissue in place of normal mucous membrane) of the older methods, which appear in reality crude and primitive in comparison with the precise, exact and scientific new method, being strictly in accordance with the best principles of modern surgical technic.

CASE OF OTOSCLEROSIS.

GEORGE E. SHAMBAUGH, M.D.
CHICAGO.

The case I have to present is one suffering from an ear lesion which to-day occupies the central point of interest in clinical otology.

He presents, in a large measure, many of the characteristic clinical symptoms of this condition. The young man is 15 years of age and has had no previous ear trouble. There is, however, distinct history of hereditary ear trouble. His father, who is also quite hard of hearing, tells me that in past generations there were a number of instances of intermarriages of first and second cousins. He has a brother who has for many years been quite deaf. The father dates his ear trouble from the time when he was 10 years old, when he had an attack of scarlet fever. There has been a gradual loss of hearing from that date until the present. On examining his ears, I find the drum membranes show no scarring or any evidence of a past suppurative process and, aside from a considerable degree of thickening, appear quite normal.

In making the functional examination it was necessary to shout in order that he might hear at all in either ear. He was unable to hear any of the tuning forks by air conduction. Even the piercing tones from the c4 fork were entirely lost. No hearing for any part of the range of the Edelman Galton whistle was present. On the other hand, the bone conduction was still moderately prolonged. There was no distinct lateralization in the Weber test, and the Rinne was, of course, absolutely negative.

The patient I present began to lose his hearing only about three of four years ago. He dates the onset of the trouble from a severe cold in the head, at which time he suffered for a short time from pain in both ears. The onset of the deafness, however, was very gradual, and there is a question whether his present ear trouble bears any relation of cause and effect to the severe cold in the head. The patient's hearing has grown slowly but steadily worse since it began. At no time has there been any distinct tinnitus aurium. The only clearly defined sensation referable to the ears has been a subjective sensation of fullness, which is much more marked during unsettled weather.

On examining the patient, the tubes are found to be normally open, both ears are readily inflated even by the Valsalva method. The drum membranes are normal in all respects, except for a decided reddish glow which is transmitted through the drum membrane, especially on the right side, from a congestion of the mucous membrane over the promontory. The same condition has been noted on the left side, but is not so marked at present.

The functional tests give the characteristic reactions for a profound obstruction in the sound-conducting mechanism, an obstruction which can only be accounted for by a more or less fixation of the key to the sound-conducting apparatus, namely, the foot plate of the stapes. There is complete loss for all tones at the lower end of the scale; even C fork 64 d. v. is not heard in either ear. On the other hand, the c4 tuning fork is heard quite normally in both ears. The lateralization in the Weber test is toward the more affected ear of the two. The Rinne is decidedly negative. The Schwabach test shows a pronounced prolongation of the bone conduction.

The negative Rinne, the lateralization to the more affected ear, and the prolongation of the bone conduction, together with a loss of the lower part of the scale, are, of course, characteristic of all obstructions in the conducting mechanism. In this case, however, the Rinne is so markedly negative, the loss of the lower part of the scale is so extensive, and the prolongation of bone conduction is so pronounced that these symptoms could arise only from a decided fixation of the foot plate of the stapes.

A localized catarrhal process in the middle ear about the fenestra vestibuli would not account for symptoms as marked as they appear in this case.

There is, in addition to these reactions, a loss of the highest tones of the

Galton whistle. He does not hear in either ear anything of the Edelmann-Galton whistle above the mark 7.

The diagnosis is clearly one of otosclerosis. The loss of the highest tones is, of course, a secondary symptom due to the involvement of that part of the organ of Corti just internal to the promontory.

In his father's case, the diagnosis of an otosclerotic process in an advanced stage is equally clear. The points of special interest here are: In the first place, the hereditary causative factor with the history of intermarriages, which is often recognized in otosclerosis; in the second place, the characteristic reddish glow of the membrana tympani transmitted from the promontory; in the third place, the loss of the upper end of the scale, which is a strong confirmatory evidence that the perception of the highest tones takes place in the lower end of the cochlea—that is, the part which forms the promontory.

DR. BECK'S CASE.

Patient has a pronounced deformity of the nose, which is said to have followed a blow. The internal examination of the nose is negative. The patient was under antispecific treatment for five months, without result. The skiagraph shows below the nasal bones four distinct nodules. The growth has developed rapidly in the past two weeks. A tentative diagnosis of sequestrum was made.

NEW ANTRAL CHISELS,

WITH BRIEF REFERENCE TO THE TECHNIC IN OPENING THE MAXILLARY SINUS.

ARTHUR M. CORWIN, M.D.

CHICAGO.

We have come pretty well to understand that in case of long-standing chronic suppuration of the maxillary sinus with extensive necrosis, granulation, polypi, cysts or new growths, the best procedure is a radical one, permitting free inspection, palpation and use of instruments to eradicate the disease, preferably the Caldwell-Luc operation, as we know it, or better still, perhaps, its more recent refinement as devised by Denker and described so well by Dr. Stolte at our February meeting last year. It is equally true, I think, that, while in some 15 or 20 per cent. of cases such radical interference is needful, in the vast majority of chronic suppurating maxillary antra these measures are unnecessary and, therefore, to advise them is seemingly poor judgment and to do them bad practice.

In rare cases of highly excitable and nervous patients at least partial or transient general anesthesia, whether demanded by the patient or not, is humane. But if this cavity can be opened and treated efficiently through the naris under local anesthesia with little, if any, pain or shock or hemorrhage and no terrifying sense of a severe operation, it seems inexcusable to subject the patient to the greater danger and the after-discomfort, etc., of the radical procedure.

Is the idea of the nasal opening of this cavity an old one? It is perhaps all the more remarkable that only since 1900 has the naso-antral route for curettement, packing, drainage and ventilation found its definite place and come to be recognized as the route of election for the relief of chronic suppuration. Boenninghaus, as early as 1892, had opened through the facial wall, and Janssen in 1894 followed a similar plan. Hajek in 1899 and many others contributed confirmative articles and refinements of technic. Caldwell had, in 1893, published the modest report of his own operation in the *New York Medical Journal*, November 4, which was to remain almost unknown until Luc's work and reports in 1896, '97 and '98. Spicer, before the British Medical Association in 1894, had advocated entrance by the facial route and just missed the glory of Caldwell and Luc in making a small counter opening through the outer nasal wall by trocar, without closing the facial wound.

To-day the dictum is fairly fixed in our operative code, that, as the antrum is normally in communication with the nasal cavity, permanent drainage where necessary should be made by that avenue and not into the more infective mouth, so that the ancient Meibom-Cooper operation through a tooth socket so long the

chief property of dentists, and I had almost said a reproach to our profession, has finally received its tag and number and already gathers dust among rhinologic relics of the top shelf. And yet dentists still do it. The sacrifice of sound teeth for antral drainage as practiced a few years ago is now very bad practice, and alveolar opening is only to be tolerated transiently in the removal of diseased roots and necrosed bone in their vicinity, a counter opening through the nose, or facial wall and nose being made if cure is not effected within a reasonably short time. The same ban has been placed upon the so-called DeSault-Krüster method of prolonged opening for drainage and packing through the canine fossa, or any modification of this, such as the operation of Kretschman and others, with or without counter opening through the nose. The nasal route to the antrum through a large opening, but without resection of the anterior facial wall, was advocated by Rethi some ten years ago following Zuckerkandl's suggestion to open through the middle meatus. So also we have the names of Onodi and Gerber and Hunter and Siebenman and others associated with drainage through the middle meatus. This procedure was no doubt suggested by the normal fragileness of the "nasal fontanelle." But this school of operators would seem to sacrifice good drainage, the chief desideratum, to ease of operating, and the results are correspondingly uncertain and unsatisfactory. Mere puncture by trocar, drills, trephine or trocar chisels as we practice it to-day following the lead of Krause and Friedlander is of diagnostic value for cleansing purposes in acute or mildly chronic cases or where the antrum has been for a short time simply a receptacle for pus overflowing from the frontal or ethmoidal sinuses. But as a cure in chronic suppuration it is on a par with the alveolar route or irrigation through the normal or accessory meatus. Mikuticz was the first, I think, to utilize the inferior meatus way to the antrum for free access.

R. Claoué of Bordeaux stated the operation in definite terms using trephine and forceps, but confining the window to the inferior meatus. This was in reality but a modification of the procedure of Dr. L. Rethi of Vienna as described by him in 1901. This, so far as I can find, is the first full presentation of the principle of a large permanent opening between nasal cavity and antrum reaching to the floor so as to give free ventilation and perfect drainage without a facial opening. He removed the anterior two-thirds of the inferior turbinated under 20 per cent. cocain and with gouge punctured the antrum, enlarging the area resected till it embraced the anterior part of both middle and inferior meatus without injury to the nasolacrimal duct. To Rethi, then, are we indebted for this epoch-making operation, which has been done with slightly varying technic and good results by many in the last five years, notably Coakley, 1902; Holbrook Curtis, 1903, with trephine and burr; Escat, 1904; Freer, 1905, with trephine and burr or forceps.

It is my desire to add my testimony to the value of the Rethi operation and to emphasize its Teutonic origin in both principle and essential technic. Incidentally I bring to your notice two antral chisels, which I have found very helpful in performing the operation. I fancy these are unique in form, though the use of the chisel is not a new idea in this field. These were patterned after models made from aluminum wire flattened at the end and bent as indicated in applying them to the nasal passage of a patient upon whom I had previously operated with trephine and forceps. The aim has been to obtain such curves in them as seem to be required in the average case. One is for making vertical cuts, the other for horizontal. The total length of each is 5½ inches, the blades about one-third of an inch wide, bevelled one way. They are used in either naris with equal facility. The vertical blade has a sharp spike one-sixteenth of an inch long at its center; the horizontal has a similar prong at each end of the cutting blade. These spikes readily penetrate the bone with a tap of the mallet, fixing the position of the blade so that it does not slip as it otherwise would without them, for they necessarily attack the surface in a direction slightly off the right angle. Delicate enough to be applied easily under inspection, the shafts are sufficiently stiff to allow of their being malleable just above the blade so that they

may be bent a little, if need be, to suit the case. However, I have found no cause for changing their curves in the six cases upon which I have used them successfully, and Dr. E. F. Ingals has also employed them with satisfaction in two cases. The shaft is flattened in a plane parallel to the plane of the cutting edge which enables one to control the direction of the blade with precision. Each instrument has a double bend so that the force applied by the mallet to the handle is transmitted to the blade in another plane nearly parallel to it.

The inferior meatus as chosen by Claoué has appealed to me as offering an area sufficiently large in most instances for the establishment of an effective opening. The exception might present in those rather rare cases in which the laterally contracted, high-arched palate, deep thick alveolar process and narrow face, occurring in women oftener than men, suggest the presence of abnormally small antra with high-placed floors approaching the level of the middle turbinated or at least above the level of the nasal floor. This combination, as pointed out by a recent writer, is in contrast to the more common type of broad face, wide low palate, vertically shallow alveolus and low-floored antrum, occurring most often in men. Careful study of each patient with these data in mind is essential, of course.

The following is a brief description of the technic of their employment:

Anesthesia is obtained by 20 per cent. cocain in 1-1000 suprarenalin solution, applied on swabs, with special care to make the application high under the inferior turbinated by small pledgets on slender applicators. Further applications of suprarenalin are made to render the operation in most cases nearly bloodless. Resection of anterior one-half or two-thirds of the inferior turbinated is accomplished by Casselberry or other good scissors, snare and Myles' forceps, leaving a narrow flap of mucous membrane which has been elevated from the upper surface of the turbinated along its base. This flap is to cover the stump of resected turbinate and greatly shorten its healing. I think the majority of us would avoid the removal of the entire inferior turbinate as recommended by Chevalier Jackson, of Pittsburg, as reported in October, 1906, *Laryngoscope*, and his statement that "most cases renew a functionally sufficient inferior turbinal in a few months and after a year no observer on looking into the nose could tell that a radical turbinotomy had been done" is misleading, to say the least, and not good advice to the young rhinologist who may read his words. The outer wall of the inferior meatus exposed by the partial anterior turbinectomy is then compassed by three incisions, one immediately below the stump of the turbinal and two vertical, in front and behind. This mucous membrane enclosed by these is quickly and easily separated by a bent elevator and remains as a flap attached below and lying on the floor of the naris. A square or quadrilateral of the bony wall is next removed with the chisels. The anterior, lower, upper and posterior cuts being made in that order. The edges of this window may be further bitten off with forceps or chiseling, according to the indication. The ridge below should be removed as far as possible, making the floors of the naris and antrum continuous. The cavity is irrigated through a bent aluminum tube with hot normal salt or other solutions suggested. The interior of the sinus is examined with flexible bent probe. Such curettage is done as may be indicated. But especially the mucous membrane of the floor of the antrum up to the wall is removed. After further cleansing the flap of mucous membrane may be trimmed as small as need be and pushed through the window. Covered by a narrow strip of gauze, dusted with bismuth and moistened in vaselin, an ounce of which has been mixed with 20 minims of phenocamphor (made by mixing equal parts of camphor and carbolic acid). The rest of the cavity is then packed with gauze of the same sort. The packing may be left for two or three days, when it is removed with care to avoid displacing the flap. Further irrigation and loose packing is done as necessary. The successful implantation of the flap depends much upon the thorough curettement of the floor of the antrum, just beyond the window. This step is an important part of the operation, as the fixation of the flap prevents closing of the opening by immediate epithelialization of its lower edge. Most of the subsequent

care of the antrum is intrusted to the patient, who quickly learns to insert an aluminum tube slightly bent at the end and flattened toward the other end to indicate to him the direction of the bend. A good irrigator is quickly and cheaply devised by ordering four or five feet of small rubber tubing. This can be weighted at one end by tying to it a good-sized glass stopper. This is thrown into the receptacle containing the irrigating fluid which is set or hung at the required elevation. A wooden snap clothes pin makes a good cut off, and a short section of glass tubing may be inserted into the irrigating end of the rubber tube so that the patient can establish syphonage by suction. The glass tube is then replaced with the aluminum irrigating tube.

Aluminum tubing about three-sixteenths of an inch in diameter outside may be purchased by the yard from dealers in this commodity. From this may be quickly made proper irrigating tubes by slightly heating to soften one end and giving it the desired curve, having inserted a piece of wire a little less in size than the diameter of the lumen.

The antral chisels were made for me by Grady & Co., 45 Wabash avenue, Chicago.

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DISCUSSION.

Dr. William L. Ballenger:—The Heath operation referred to by Dr. Pierce is based on good principles, but what the results will be can only be shown by experience. Heath reports ten cases in which marked improvement in hearing occurred, and with the closure of the drumhead in seven. Heath claims it to be a substitute for the radical mastoid operation. The principle of the operation is to avoid destroying hearing; in fact, to preserve it. Heath claims the results are equally good in cases of thirty years' standing and in cases of thirty days' standing. I have operated five times by this method, but am not ready to report the results.

I wish to speak of some instruments devised for clearing out the middle-ear cavity by blowing, both during and after the operation. The canulas are so shaped that they are readily introduced into the aditus ad antrum. Air pressure is then applied and the secretions and débris blown out through the perforation in the eardrum. I have three sizes for each ear. They are introduced through the posterior meatal opening down to the annulus, and then turned forward into the aditus. Either air or fluid may be forced out through the perforation in the eardrum. Heath is of the opinion that the Eustachian tube is sufficient to drain secretions from the middle ear, but is inadequate to drain the middle ear, antrum and mastoid cells in combination. So he leaves a meatal opening in the posterior wall of the meatus through which he drains the mastoid cells and antrum, leaving the Eustachian tube to drain the middle ear.

Contrary to what Dr. Andrews recommended, Heath claims it is better to leave the ossicles alone, even when they are much destroyed, because by loosening them we disturb the fixation of the stapes in the oval window, and thus hearing is impaired.

Dr. Allport has devised some very ingenious instruments, and in doing my last Heath operation I discovered that his retractor is very useful to expose the drumhead to view, though the instrument is too heavy. So I have had an instrument made which is an adaptation of Todd's tendon tucker. It is very useful in this operation. It might also be used to expose the middle ear in a radical mastoid

operation. I call it the meatal retractor, as it is used to spread the meatal flaps apart.

As to Dr. Corwin's paper, I think that his instruments are good. A year ago Dr. Vail exhibited an instrument for the same purpose as Dr. Corwin's. His instrument consists of a saw made of a section of a tube. Dr. Vail was the first to introduce the same for making the lateral window. It is a splendid instrument. It cuts out an elliptical-shaped piece very quickly and of sufficient size to thoroughly drain the antrum and leave a nice, smooth cut surface.

Dr. Henry Gradle:—Dr. Stolte's description of the new operation for turbinectomy gives me an excuse to show an instrument which I devised for the partial removal of the inferior turbinal. It is a trephine working in a guard, which consists of a cylinder of brass, and from which one-half of the periphery is removed. I exhibited the instrument recently at a meeting of the Chicago Medical Society. It cuts smoothly and removes the exact amount of tissue desired. With it the operation requires but a few seconds of time.

Dr. Otto T. Freer:—The first description in this society of the operation of the removal of the greater part of the nasal wall of the maxillary antrum for empyema was made by me in 1905, and my recommendation of this procedure met with much opposition at that time. It is a pleasure to note that this opposition has not only disappeared in this association, but that in gatherings of an international nature, such as that of the British Medical Association at Toronto, the operation through the nasal wall has found such distinguished advocates as Dr. C. G. Coakley and Dr. G. L. Richards.

The method which I described in my first communication was that of the resection of the anterior two-thirds of the inferior turbinated body, followed by the removal of the anterior two-thirds of the nasal wall of the antrum in the lower and middle meatuses by means of the straight trephine and burr driven by a strong, high-speed dental engine. I have practiced this method with the greatest satisfaction ever since my first description, and I am surprised that it has been so little adopted by others and that it is thought necessary to seek for other implements, such as forceps and chisels, when the dental engine, burr and trephine have in my hands proven so peculiarly fitted for the work.

Curettement I have never found necessary, although all of my cases were chronic ones, for the suppuration from the antrum always ceased promptly as soon as the large opening for drainage and ventilation was established. The only implement in addition to the trephine and burr needed is a punch forceps to trim off portions of mucous membrane left after the bone has been cut away. A full description of my method may be found in the *Chicago Medical Recorder* for 1905 and the *Laryngoscope* for the same year.

Walter A. Wells, in a recent most complete and admirable article on maxillary sinus suppuration (*Laryngoscope*, December, 1906), objects to the trephine "as difficult to manipulate in the narrow nasal cavity, because held at an angle at which it must be, it tends to slide along the wall and thus injure the surrounding structures, or, having penetrated the cavity, to strike upon the posterior wall and injure the internal maxillary artery or possibly the second division of the fifth nerve." Practical experience teaches me that these objections are merely theoretical. After the removal of the anterior two-thirds of the lower turbinal the trephine may be most accurately applied with the aid of sight to the nasal wall. I have not found that it has the least tendency to slip, as its teeth are held by mucous membrane. The fact that but slight pressure is required to make it penetrate, its advance being due to its high speed rotation, prevents any danger of its punching suddenly through and injuring the posterior wall, an accident much more likely to happen when the trocar or chisel is plunged through the nasal wall. It is possible, by forcing the cartilaginous nose well over, to apply the trephine at only a moderately acute angle to the nasal wall and to bring its cutting edge as far forward as need be.

So painlessly and easily does the trephine penetrate even a thick bony antral wall in the lower meatus that I now employ it for diagnosis instead of the trocar

in this region. In several instances I have failed to pierce unusually thick bony walls in the inferior meatus even with a strong Krause trocar, and the splintering penetration of this instrument, creating a fissured stellate fracture, always in my experience caused a great deal of pain. At present I pass as large a trephine as I can under the intact lower turbinate, bring its cutting edge well forward by pressing over the cartilaginous nose, and I have always found the patient surprised at the ease and painlessness with which his antrum has been entered. An Eustachian catheter is then passed in through the opening made and the antrum washed out, the fluid welling up from its lowest part and thus stirring up and forcing out of the natural opening all thick cheesy pus that may have settled to the bottom of the cavity. The foul-smelling secretion is ejected in a thick stream in a manner that convinces doubting patients of the existence of empyema in their antra and makes them willing to undergo the operation of resection of the nasal wall.

Diagnostic washings through a trocar canula introduced into the antrum through the middle meatus I have not found satisfactory. The reason is that water introduced in this way into the upper part of the antrum of Highmore will not always mingle with the thick pus collected in its lower part; instead of this, flowing over it and coming out clear or nearly so from the natural opening, thus leaving the investigator in doubt as to the existence of empyema of the antrum or making him think the cavity free from pus when in reality viscid, clotted, purulent matter lies in its bottom which will be ejected from the natural opening if the washing be done through an aperture made in the lower meatus. I recommend, therefore, diagnostic opening of the antrum of Highmore under the intact lower turbinated body by means of the trephine driven by a dental engine. The latter should be of high speed and good power.

So far I have had no difficulty in introducing the trephine underneath the elastic lower turbinated body which may be sprung upward out of the way. Should it prove impossible to lift it sufficiently I can see no material objection to passing through both turbinate and antral wall with the trephine.

The objection to the chisel, to my mind, is its tendency to shatter thin brittle bony partitions, such as the nasal wall of the antrum. I have also found that the use of chisels in the nose always causes a good deal of pain. I do not think that the light chisels Dr. Corwin has displayed would be efficient in cutting away the often massive and strong bony base of the nasal wall.

Considering how seldom curettement is necessary, I do not regard the preservation of the flap described by Dr. Corwin as of practical importance.

Dr. Joseph C. Beck:—Speaking of the Krause trocar, I wish to say that in the last six cases I have used the trocar with much satisfaction. In one case, that of a girl, 18 years old, it was impossible to pass the trocar into the antrum, so that one is likely to encounter these thick bony walls in young persons and in women as well as in old persons and in men. I think that the trocar is one of the best instruments with which to enter the antrum above its floor. My method is to use the trocar previous to partial fracturing of the inferior turbinal, not removing any portion of it, and then the Spiece forceps is passed into the antrum and any sized opening can be made with more ease and with less trauma to the patient than with any other method.

Dr. Pierce, in the case of facial paralysis, mentioned that the connection between the facial and hypoglossal nerve is naturally re-established. That is not true. Whenever the facial nerve is severed and more than one-sixteenth of an inch of nerve is removed, there is no bridging over, and complete paralysis can not be prevented. A re-establishment of function is not to be expected. You must make an anastomosis. The result in Dr. Pierce's case is not due to a little twig of anastomosis, but is the result of an anastomosis between the facial and hypoglossal nerves.

As to the case he exhibited for diagnosis, I think possibly lack of time prevented Dr. Pierce from going into all the details of the case. I would ask whether the patient has received antispecific treatment, whether any portion of the tissue

has been examined, and whether the tuberculin test was made. I think that would help to clear up the case.

Dr. J. Holinger:—I would refer Dr. Beck to the reports of Dr. Bezold as to anastomosis of the facial nerve.

Dr. Otto J. Stein:—The cases shown by Drs. Pierce and Andrews appeal to me particularly because I saw Dr. Heath of London operate several times. I was struck with his method of operating. He did not use a self-retaining retractor. He made the postauricular incision in the usual manner, and then separated the soft tissues from the bony canal and immediately began to chisel out the posterior-superior canal wall. He soon reached the antrum and after curetting the aditus he blew out the secretions in the attic and middle ear. I was particularly struck with several omissions in his surgical technic and in his asepsis.

As to the results in his cases, they are about as he gives them in his recent paper. I can not understand why he omits to explore the mastoid process in most of his cases. He apparently made no attempt to do this, but goes into the antrum seemingly disregarding the possibility of a suppurating cavity further down toward the tip. Such a cavity must be present in many chronic cases, and any small sinuses that may be present can not be detected unless we expose the parts more than Heath does. At the same time he must assume that there is no necrosis in the tegmen tympani. He maintains that the "danger zone" is entirely in the antrum, and that there is scarcely ever any necrosis in the region of the tegmen tympani. But how can we tell unless we expose that region? This operation, although it has a place, is liable to prove a serious one when done by men who are not fully posted in the pathology of the ear. So that I would rather caution against too promiscuous operating by this method.

As far as the preservation of the hearing is concerned, that is a point that must be considered. I notice in Heath's report that in some of the cases there was marked destruction of the drumhead and necrosis of the ossicles. In such instances many of us would hesitate to operate after this method.

As to Yankauer's operation, I have raised the hypertrophied tissue from the lower turbinal by a somewhat similar method, although not so extensive. At that time I made just one incision from the posterior end of the turbinal, commencing at the juncture of the lower third with the upper two-thirds and extending from the posterior to the anterior end. I raised the soft tissues by making a large flap above and a smaller flap below. The excess of bone was then removed and the flaps trimmed and brought together, using a packing to keep in place. I had good results, even though I never attempted any suturing.

Dr. L. J. Hughes:—The cases I wish to report illustrate the relation of eye symptoms to sinus disease. The first patient was a young lady, 18 years of age, who had been under the observation of a general practitioner for several years for frontal headaches, which sometimes extended to the occipital region. They were more or less constant. We referred the headaches to the eyes, and on examining these we found marked hypermetropic astigmatism, three and a half cylinders, with 1/25 sphere. She had a correction under atropin, and the symptoms were partially relieved for a while. She also had quite an esophoria, 18 or 20 degrees. Under all the treatment we could give her, both local and general, there was very little improvement, so that we looked elsewhere for the trouble.

An examination of the nose revealed slightly enlarged turbinals and, while the patient was under observation, there developed a fairly large polypi from the middle turbinal. This was excised by Dr. Beck, and her symptoms were slightly relieved. Later on, the middle turbinal became enlarged and pressed against the lateral wall of the septum. It was removed, and almost immediately all the symptoms disappeared, and up to the present time the patient has had relief.

The second patient came under observation last Thursday. The man complained of severe frontal and temporal headaches. He had had some stomach trouble and to this he attributed his headaches. I found that he had a blepharospasm of each eye. Visual acuity was 20/30, and otherwise the eye was normal.

Under atropin vision was found to be practically normal. He had 20 degrees of esophoria, but no marked deviation. The first thing we saw on Saturday morning was a paralysis of the external rectus muscle, and, suspecting a specific origin, he was put on mixed treatment. The following morning (Sunday) he was found dead in bed. At the inquest it was shown that last October he was held up and severely battered by footpaas. At that time there were marked contusions about the eye and the ear. There was also a history of influenza. The dura was found adherent, and there was a marked hemorrhage all over the brain. The immediate cause of death is open to question, but the possibility of sinus infection due to grip is very interesting.

Dr. Pierce (closing the discussion on his part):—The operation which some of our members have referred to as the Heath operation has, to my certain knowledge, been in service for a good many years. It is perfectly absurd to tack on to a surgical procedure the name of the last man who has written about it. I believe it has a very limited field of usefulness, but that field can not be ignored.

As to the last case I reported, I want to call attention to the fact that when I first saw the patient there was no granulation tissue, the bottom of the ulcer consisting of the bone. There was a slough around the margins of the ulcer, and this was composed of this whitish material, mixed with dark-colored tissue, entirely necrotic. The patient had had antispecific treatment, without any result. I think the case will bear watching, not making any attempt to interfere. I believe it is due in some way to the hysterical condition. Some instances have been observed, and, therefore, I am going to wait and see the outcome of the case. It is changed absolutely in the week that I have had the patient under observation. The ulcer is closing up. Her unconscious spells have entirely disappeared, except the one she had when I examined her for the stigmata which, as I have said, were so typical.

Dr. Andrews (closing the discussion on his part):—I think that the operation in which radical work is done, with the exception of removing the ossicles, has a place, although the field is not a very extensive one. If we can operate and retain the patient's hearing, we ought to hesitate a long while before we undertake to remove the ossicles.

It has been asked what means we adopt to know just exactly what is being done deep down in the operation cavity. I think if we will use a Koerner flap, and make the incisions before completing the bone work, we will have no trouble in easily seeing into the depths of the operation cavity.

Dr. Corwin (closing the discussion):—The chief point I wish to make in speaking of the operation, which is really the Claoué, a modification of the Rethi, is the preservation of the flap. That can be trimmed to any proportions and put through the window to cover with epithelium its lower margin. That is the essential feature of the operation. Saws and trephines and burrs and forceps can be utilized in making the opening, but it struck me that the chisel is very useful in many cases. There is no danger in using it of injuring the flap which one has taken the trouble to save.

Regular Meeting, March 19, 1907.

Dr. J. Holinger, President, in the chair.

CASE OF EXFOLIATION OF THE OS TYMPANICUM.

Dr. F. G. Stubbs:—This young man, James R., aged 20, has an hereditary crumpling of the auricle, with a supernumerary tragus. The auditory canal has always been extremely narrow and accounts for the course of the disease. While the hearing in that ear had never been acute, yet he had never had any inflammation previous to this attack. About the middle of October, on returning from work, he was taken with a sharp pain in this ear, which continued all night, and kept him from going to work the following day. That evening the pain eased up and he soon noticed what he thought was a moisture from an increased amount of ear wax. The following morning there began to appear a swelling behind the ear

and some paralysis of the same side of his face. The next morning (fourth day) he came to my office, when I saw him for the first time. I found complete facial paralysis, a boggy swelling behind and somewhat below the ear, the canal completely closed, and from which I could see a slight discharge of muco-pus exuding. The same afternoon I operated, making the usual incision as for a simple mastoid, but prolonging the incision farther down than usual. I found pus outside the tip, and on enlarging the incision soon got into an abscess cavity below and anterior to the tip. In this cavity I found the facial nerve, and so I cautiously mopped it out in order to avoid wounding the nerve. Believing I had a Bezold's abscess to deal with, I proceeded to open the cells. I found them normal, but at the same time found the os tympanicum free from all attachments, and removed it entire. The inner third of the soft parts of the canal, together with the middle-ear cavity, was necrotic and had to be curetted, so that I had a condition somewhat similar to part of a radical mastoid, except the attic wall and antrum were not disturbed. In two months the wounds were healed, and I do not think the external canal is any narrower than it was before the operation. The secretion has now ceased, and hearing is about half of normal.

I did nothing for the facial paralysis, as it is shown by experience that where the integrity of the nerve is not injured the usual course is to complete restitution of function. As you see, the results are perfect, but it is only in the last few weeks that it is so.

I am unable to find as far as I have gone in the literature a report of this exact condition of affairs. In young children this part of the temporal bone is not uncommonly cast off as a sequestrum, for at that age it is not attached to the other parts of the temporal by bony union. In the adult it is not rare in syphilitic necrosis to find that all or part of the os tympanicum is cast off as a sequestrum. But in this case it was entirely dissected loose by virtue of the fact that the pus was held back by the narrow canal and thus forced through the suture attaching this part to the squamous and petrous portions. The abscess forming below this and the tip of the mastoid and thus early causing the facial paralysis.

It is well to bear in mind the formation of this portion of the temporal in its embryonal formation, and to remember that this suture is frequently only loosely formed of connective tissue, that the blood vessels pass through it and enter the cells of the mastoid, and hence form an atrium for the infection in the mastoid to pass out and point below the tip of the mastoid.

A CASE OF RHINOSCLEROMA.

Dr. F. G. Stubbs:—This patient, Mary G., aged 21, is a native of Austrian Poland. She has been in this country four years. Previous to this time has never been sick, and first complained of this trouble some time after coming to New York, where she first lived. Then she was told that she had only some slight catarrhal affection. Her symptom was an increased nasal secretion. For the space of a few months before coming to Chicago, five months ago, she began to have a slight cough and a peculiar huskiness to the voice. This increased so that the breathing was as loud as a patient with croup and could be heard in the next room.

She was referred to me six weeks or so ago by Dr. Hedger, and I found the following conditions: The lower turbinates on both sides were enlarged in their posterior thirds, larger on the right, firm to touch and of a grayish color. The lower edges of the choanæ were thickened, as was the neighboring edges of the septum. The pharynx showed no invasion of the process. On looking into the larynx I found the cords unaffected, but the rima glottis gave the appearance of looking into a cavern. This was due to a subglottic swelling covered with mucus and blackened with Chicago soot. It was difficult to make out any chink at all through which air could pass. I succeeded in passing a No. 2 Schroetter dilator, and continued this every other day at first, till now I have been passing it only once a week. This has relieved her of all dyspnea and reduced the cough. During the time she has been under my observation there has been a perceptible increase

in the size of the swellings already present and an additional one on the base of the tongue.

I excised a piece of tissue from the lower turbinate, and at the same time had cultures taken from the secretion, which was free in the nasal passages. The latter showed almost pure cultures of the rhinoscleroma bacillus, and it was found in the tissue as well. The tissue also showed the typical pathological conditions, including the "Mikulicz cells."

In view of the hitherto unsatisfactory results of treatment, I had not taken up any definite procedure aside from keeping the subglottic space open for easy breathing. Recently there have been a few cases reported in Europe and New York in which it seems evident that the *x*-ray has acted as a specific, so to speak. Of the two cases reported from New York I saw one last spring with Dr. Ballin at the Mt. Sinai Hospital. This case was affected only in the nose and externally, but is reported as cured. It is to be hoped that a cure has been found, for the condition was almost hopeless up to now. Although the disease is not fatal, unless it attacks the lower trachea and bronchial tubes, yet it is a serious form of rhinitis and more to be shunned than atrophic rhinitis.

The importance of presenting this case to you to-night lies alone not in its rarity, and hence an "interesting case," but to draw our attention to the fact that, while there are not a score of these cases reported in this country, there is no reason why they will not become more numerous as our unrestricted immigration allows more of these cases to come among us. The disease is on the increase in Europe, and on account of its infectious nature governmental measures have been talked of in eastern Prussia to deal with it as with leprosy.

Dr. Reichman has offered to use the *x*-rays on this case, and I will present it again so you can see whatever progress is being made. While it is not difficult to apply the rays to the nose, it may be more difficult to reach the interior of the larynx. We hope to obtain therapeutic results by applying them over the larynx. If it does not prove active, then it is a question whether by the aid of tubes the rays can be applied through the mouth or a laryngo-fissure have to be done and the larynx kept open while the treatment is being carried on.

DISCUSSION.

Dr. Elmer L. Kenyon:—One important matter with reference to rhinoscleroma is the making of an early diagnosis. I doubt whether rhinoscleroma has ever been seen and diagnosed so early that the disease could be handled at the beginning. This is unfortunate, because the condition is a serious one; when it attacks the larynx it must be considered as approaching carcinoma in seriousness. Dr. Stubbs' case is a late one, but there are appearances in the nose which possibly represent conditions which might be found at the beginning of the disease. I refer to the hypertrophy at the middle portion of the right lower turbinate. Laryngologists should be on the alert to become familiar with the conditions which make possible an early diagnosis.

Concerning treatment, surgery, excepting in the direction of alleviation, has invariably failed. The tumor removed from the nose in the case I studied returned exceedingly rapidly within a few weeks.

There is reason to believe that native Americans are susceptible to the disease, although it is fair to suppose that the infection has not been present in this country except as brought in. Several years ago a Buffalo physician reported a case occurring in a native American who had never been out of the country. However, in tnat instance a microscopic diagnosis was not reported.

The patient I saw had drifted from physician to physician for five or six years without receiving a suggestion of a correct diagnosis. Recently I saw a case of carcinoma of the larynx which had gone through much the same experience. It seems to me desirable that when the opportunity arises something should be said in the way of impressing upon general practitioners the importance of having an expert examination made where diagnosis is doubtful.

A CASE OF IDIOPATHIC ABSCESS OF THE NASAL SEPTUM.

Dr. J. Holinger:—This little boy of 5 years traveled with his father across the country on a very cold winter day about a year ago. On returning home his father noticed a red swelling in both nostrils. Nasal breathing was impossible. When I saw him five weeks later the mucous membrane of the septum filled both nostrils. The condition has changed comparatively little since then; the swelling is reduced. There was complete absence of the cartilaginous septum from the beginning. Pus was discharged from the swellings in both nostrils and from the right upper incisor, on pressure of the gums. The tooth was extracted. The mucous membrane of the septum was treated as in acute anterior rhinitis, but improvement was very slow. The bone below the apertura pyriformis became thickened and small spiculæ of bone were repeatedly exfoliated. I made an incision into the swelling and at every treatment I evacuated a few drops of pus. During the last two weeks, that is, over a year after the beginning of the disease, the permanent incisor tooth erupted in an abnormal position from the anterior surface of the gum. The abscess is drying out very slowly. The triangular cartilages have disappeared.

A CASE OF CHRONIC AFFECTION OF THE EUSTACHIAN TUBE; 3 SCHWARTZE, 1 RADICAL OPERATION; PERICARTILAGINITIS; CURED PARALYSIS OF THE FACIAL NERVE.

Mr. N. was seen the first time in July, 1903, complaining of nearly the same symptoms as he does now, namely, headache, dizziness, running of the right ear, noise. The Eustachian catheter relieved all symptoms and the functional tests showed that there was no other change in the middle ear. A course of treatment with catheter improved the condition. He left the city. Soon all his ailments reappeared. I saw him again in summer of 1905, when he had a large suppurating fistula behind his right ear, packed with iodoform gauze, and again he complained of dizziness and headache. He gave the following history: He was operated upon in fall of 1903 in Chicago and made a very slow recovery extending over three months. He was operated upon a second time about two months before I saw him in 1905. A large scar in the neck behind the sterno-cleido-mastoid muscle dated from an abscess operated in 1903. He said that the depth of the wound was cauterized at regular intervals by his doctor in Des Moines and till the fistula would not close. I catheterized the tube every second day and the fistula closed after two weeks. He again left the city and reappeared at my office last June. He was previously operated upon for the third time in March, 1906. He complained again of headache and dizziness. A course of treatment with the catheter relieved him temporarily, but he wanted to be cured permanently. I therefore proposed radical operation, which was performed in Alexian Brothers' Hospital. A large keloid in the old scar was removed. The bone was very hard and showed no cells. A fistulous tract began one centimeter below the outer plate above the antrum, and led to a whitish fibroid mass, round in shape and one and one-half centimeters in diameter, which was not well outlined from the surroundings except from the tympanic cavity. This mass made me suspicious of carcinoma and was therefore completely removed, regardless of consequences. The posterior semicircular canal was opened and the dura exposed to a large extent. The whole posterior bony wall of the meatus was removed, together with the incus. A "Y"-shaped incision in the concha, suturing and packing through the wound in the concha were done in the usual manner. The specimen was lost, notwithstanding the extreme care that was recommended for its preservation.

The next day there was complete facial paralysis on that side.

He made a very slow recovery. The first dressing was changed 5 days after operation; 10 days after operation swelling and pain in the auricle appeared. The dressings were changed every day. The auricle was exposed to sunlight for hours. A perichondritis ran its full course and left the auricle with a horizontal

fold above the meatus. The epidermis of the wound was very slow in forming and took over 8 months, five times as long as usual. The drum membrane regenerated to its full extent, and with it the old complaints of headache and dizziness reappeared.

The lack of any tendency of healing is shown in another fact. The wound behind the ear had healed by primary union, when several months after operation a suppuration started up from a part of the wound, that was dry and epidermized for several weeks. It destroyed all support of the scar and left, after a long course, a deeply retracted, funnel-shaped scar, with a very narrow, perpetual opening behind the ear, which I am going to leave untouched, as the slightest touch with a probe wound with cotton is liable to start a suppuration lasting for months.

The ear is dry at present. Now and then a small drop of pus forms in the outer excavation of the canal from under the outer scar. The paralysis of the facial nerve has disappeared, he closes the eye and moves the angle of his mouth.

The functional tests show:

Hearing distance H. r. ear 0 for whisper, l. ear 5 m. for whisper. Rinne test. R. r. + t., l. ear + 10.

Weber-Schwabach's test: W. S. A. in the l. ear + 15. A' in the r. ear.

Lowest sound heard: r. ear 38 V. d.; l. ear A'.

He comes three times a week for catheterization.

The features of this case are:

1. Three Schwartze and one radical operation on account of symptoms due to occlusion of the Eustachian tube.

2. Complete paralysis of the facial nerve, cured.

3. Extremely poor tendency of healing of the soft parts and the bone.

4. Pericartilaginitis of the auricle cured with scar.

5. Except discharge, persistence of the original symptoms, headache, dizziness, subjective noise, which are all relieved after catheterization.

This last point involves theoretical questions: How can those symptoms be explained in view of absence of the incus? Suction on the stirrup?

DISCUSSION.

Dr. J. C. Beck:—I would like to ask Dr. Holinger why he called the first case one of idiopathic abscess. Supernumerary teeth and alveolar abscesses frequently burrow along the septum, thus causing the condition seen in this case. The appearance of sequestra and pus and the later eruption of the tooth show that such a condition may have existed. I have a similar case under observation. Leaving the pus cavity alone shows an extension along the floor of the nose toward the septum, and when opening the cavity pus exudes and the bogginess and swelling in the nose disappear. A radiograph may show more than one tooth, and I would suggest that Dr. Holinger have one made. It may suggest a cause for the condition.

In regard to the second case, it is nice to see so many cases that get well without operative interference, but I think you will find that the continuity of the facial nerve was not destroyed entirely. Inflammatory conditions will produce facial nerve paralysis, and when this subsides the nerve regains its function.

With regard to the use of *x*-ray tubes in the mouth, that is impossible, because we can not get a bulb that is small enough to throw a direct ray on the larynx, and the ray can not be deflected, but can be passed through the neck.

Dr. Holinger (closing the discussion):—The tooth did not appear until about two weeks ago. Before that it looked like a callus. I think the abnormality of the tooth is rather effect than cause of the suppuration, because a thickening of the bone began to develop only eight months after the tooth was pulled, and even now the abnormal tooth is far ahead in development of all other teeth, owing to the early extraction of the milk tooth.

CASE OF LARYNGEAL NEOPLASM.

Dr. Otto J. Stein:—The patient is a man, 48 years old and a coal dealer, who has always been healthy. No history of venereal disease. His father is still living; his mother died at the age of 60, of some heart affection. The family and personal history is absolutely negative. The present trouble was first noticed as a hoarsesess less than four months ago. It came on gradually, but finally got so bad that he consulted a physician, who treated him expectantly. He has lost about ten pounds in weight in six months. His appetite is good; temperature is normal. Examination of the chest disclosed an emphysema of no great moment. The sputum was negative. The man had a severe pharyngitis when first seen, but that has disappeared.

On examining the larynx nothing is seen above the cords, but below the right cord there is visible a tumor that is attached to the lateral wall of the larynx. The cord is quite red, thickened, and almost immovable. At the edges it is slightly ragged. The left cord is normal. There is fair compensation and approximation is very good. The tumor has a yellowish-pink color, suggesting a papilloma or granulation tissue. On palpation there can be felt slight enlargement of the glands of the neck, but palpation of the larynx shows no marked thickening on the right side. Evidently the mass takes its origin deep in the tissues of the larynx. Microscopic examination of the tumor mass showed granulation tissue. The history and laryngeal picture indicate a malignancy. If this is the correct diagnosis it is imperative to operate radically and without loss of time in order to secure the most favorable prognosis.

DISCUSSION.

Dr. E. Fletcher Ingals:—The history of this case is so typical of malignancy that it seems that there is no chance of its being anything else. There are only three things that it might be, syphilis, tuberculosis, or carcinoma. From the history, I would say carcinoma. The cases of subglottic tumors that I have seen do not show up very much, even though they involve considerable tissue, and prevent the movement of the cord. I have not yet seen any that could be successfully removed in any other way than by a laryngectomy, for the reason that, although the growth may have appeared small on laryngoscopy, it was shown at the operation to have passed a considerable distance beyond the median line.

Dr. G. W. Boot gave a demonstration of preparations of sections of the human embryo, showing the development of the nose, antrum, sinuses, and portions of the middle ear.

DEMONSTRATION OF PROBABLE ANGIOMA REMOVED FROM EXTERNAL AUDITORY MEATUS.

Dr. George E. Shambaugh:—You will remember that about a year ago I exhibited before this society a patient who had vicarious menstruation from the ear, the bleeding taking place from a swelling on the upper anterior wall near the external part of the meatus. The growth filled about two-thirds of the meatus, and terminated in a nipplelike projection. A crystal of chromic acid checked the bleeding, but the swelling was the source of a great deal of annoyance. The tumor was removed six months ago, and there has been no evidence of recurrence. At the menstrual period the ear previous to the removal would become red and annoy the patient very much for a week. The tumor bled freely at its removal. It shows a very greatly thickened skin; the deeper structures are very vascular. The tissue resembles the erectile tissues of the turbinated bodies. The tumor is evidently a form of an angioma.

Regular Meeting, Tuesday, May 21, 1907 at 8 P. M.

Dr. J. Holinger, President, in the Chair.

ANASTOMOSIS OF THE FACIAL NERVE WITH THE HYPOGLOSSAL NERVE.

Dr. Joseph C. Beck:—The case was one of angio-endothelioma of the middle ear, involving the facial nerve, in which a radical operation was done a year ago.

A secondary operation was done on the facio-hypoglossal nerve, the anastomosis being made by implanting the facial into the hypoglossal seven weeks ago. Contraction is beginning to appear in the lower facial muscle. A recurrence of the tumor was also removed at the same time. Since then there has been no recurrence. The hypoglossal nerve was situated low down and considerable traction had to be exerted to effect the anastomosis; hence the nerve was kinked, and this was the cause of this partial paralysis of the tongue.

DISCUSSION.

Dr. John G. Wilson:—It is not possible to get the functional union of the facial nerve with the hypoglossal by merely laying the former along the side of the latter. What is necessary is to implant the peripheral end of the facial on to the central end of a part of the whole of the hypoglossal. To do this some fibers of the hypoglossal must be cut. So the paralysis Dr. Beck refers to as a flaw in his results, could not possibly be avoided; on the contrary, he is to be congratulated that the resulting paralysis is so slight.

Dr. Beck (closing the discussion):—Dr. Wilson saw the first case I operated on and pronounced it a good result, and yet there was no paralysis. I did what I attempted to do in this case—implant the facial stump into the hypoglossal, turning it upward, so that the fibers from the hypoglossal would carry stimuli to the facial stump.

THE PRESENT STATE OF OUR KNOWLEDGE WITH REGARD TO THE PHYSIOLOGY OF THE SINUSES ACCESSORY TO THE NOSE.

(Abstract.)

J. Gordon Wilson, M.A., M.B. (Edin.).

The various hypotheses that have been advanced from time to time to explain the presence of the accessory sinuses of the nose make an interesting chapter in the history of medicine. From the early period when they first attracted notice down to the present time more or less plausible theories have been in vogue. Thus, they have been supposed to serve to secrete mucus. But the position of the nasal openings of the principal sinuses is obviously opposed to such an hypothesis, to say nothing of the fact that under normal conditions mucus is not present in these sinuses. They have been held to be necessary to produce a sonorous voice. Especially was this supposed to be the case in regard to the frontal sinus; but the irregularities in its shape and the fact that it may be absent with no apparent alteration in vocal resonance, as well as its more or less obliteration in pathological cases with no apparent change of voice, require the abandonment of this theory. In the orang, Zuckerkandl states that at one time he thought it possible that the large sinus maxillaris there present might act as a resonator; but the inconstancy of its formation led him to abandon this supposition.

Before discussing more recent views on the physiology of the accessory sinuses it may be well to recall certain facts with regard to their embryology and some points in regard to the physiology of the nasal cavity, which bear on this problem.

1. *Embryology.*—The accessory sinuses are produced by the projection outward of the nasal cavity. In the mesoderm which surrounds the primitive nasal cavity there is formed within its interorbital septum a cartilaginous plate with openings for the branches of the olfactory nerve. This plate sends down two cartilaginous laminæ to form the side walls of the nose and a medial plate dividing the nasal cavity into two parts. The ends of these cartilaginous side walls, and the ridges which appear on it, form the embryonic chief turbinates. Lying in these furrows between the ridges one notes accessory turbinates formed in the same way and separated by accessory furrows. In the course of development the embryonic chief turbinates are reduced in number to three or four.

The sinuses are developed by a widening out of the accessory furrows. This is especially well seen in the frontal sinus, which develops from a depression in the furrow which lies between the first and second embryonic turbinates. By the increase and growth of this into the frontal bone the frontal sinus is formed.

At birth it is not present and only begins to appear as other than a slight depression about the sixth or seventh year. The sphenoidal sinus arises in the posterior part of the nasal cavity and by some has been regarded as the posterior part of the primitive nasal cavity inclosed in bone, by others as a depression which invades the body of the sphenoid. The maxillary sinus is foreshadowed by a small depression which is easily seen at birth on the side wall, in the furrow between the horizontal part of the first and second turbinates. The ethmoid cells arise from the anterior part of the chief embryonic furrows. In these the accessory turbinates and furrows widen irregularly, the tops of the furrows adhere more or less closely to form primitive chambers. The final state of the pneumatic chambers differs. Whilst the frontal, sphenoidal and maxillary press into the skull capsule, the ethmoidal are limited as a rule to the cartilage and bone from which they started, though occasionally they may invade the adjoining bones. It has to be noted that though the primitive ethmoidal cells have olfactory epithelium, the secondary never have. The frontal, sphenoidal and maxillary sinuses never have olfactory epithelium.

2. *Comparative Anatomy.*—Comparative anatomy shows how widely distributed pneumatic chambers are, how large they may become, and what a variety of purposes they may serve. In birds, where they are well developed, their function has been the subject of much controversy. Generally the skeletons of large birds that fly well (storks and swans) are most pneumatic; but there are many exceptions. Thus the bones of the swifts are solid and the air cells are chiefly confined to the cranium; many parts of the skeleton of the large ratitæ are very pneumatic. Some of these air sacs are for sexual adornment (bustards); others act as resonators (prairie fowl); others serve as reservoirs for air (lark and nightingale). But their principal function seems to be to assist the respiratory mechanism by "ventilating the lungs and to regulate the exhalation of watery vapor" (Newton).

In mammals, in addition to those found in man, there may be others present. Thus in the deer they are present in the palate bone. They are very large in animals with massive heads, e. g., the elephant. The deduction one must make from a comparative study is that these cavities enlarge, with the least degree of weight, the osseous areas necessary to these animals. At the same time one notes that animals with perfect smell apparatus have very large ethmoidal cells, which outweigh the frontal and sphenoidal sinuses; and that animals with very little smell have the ethmoidal cells reduced in size or may even have them absent.

There are four hypotheses in regard to the physiology of the accessory sinuses that I wish to discuss.

1. That they supply warmth and moisture to the inspired air.

2. That they are olfactory cavities.

3. That their position causes a passage of air over the olfactory mucous membrane.

4. That they lighten and increase the mobility of the head.

1. That they supply warmth and moisture to the inspired air. All acknowledge the advantage of nasal respiration and recognize that the inspired air receives heat and moisture. We have very good proof that this is the function of the turbinates. We have no reason to believe that the accessory sinuses play any part in this, but, on the contrary, we have, I believe, very good proof that they have little or no effect on the change. In the first place, the mucous membrane of the sinuses is very thin and poorly supplied with glands and blood vessels. Again, the cavities themselves are relatively too small to have any perceptible effect even supposing they were capable of being sucked dry; I believe the amount of air that passes out during inspiration is relatively small. In short, it appears to me that the supply of warmth and moisture they are capable of giving as cavities is practically negligible.

2. That they act as olfactory chambers. As opposed to this, one finds that the olfactory nerve has no endings there; that the lower apes and children in whom smell is present have no sinuses; and that anosmatic animals possess

sinuses. Against this not one positive fact can be advanced to support this hypothesis.

3. That their position causes a passage of air over the olfactory mucous membrane. This theory is based principally on the experiments of Braun and Classen, who showed that there was considerable variation in pressure during respiration in the chambers accessary to the nose; and concluded that while in normal respiration the air does not pass over the olfactory region, yet the secondary current resulting from this variation would carry odorous particles to the olfactory mucous membrane. There are many objections to this hypothesis. Thus acknowledging that secondary currents exist, it was not shown how those related to the frontal and maxillary sinuses could affect the olfactory mucous membrane. Further, if the sinuses play so important a part in smell, it is difficult to understand why in man they develop so late in life and may even fail on one side without compensatory enlargement on the other; also why in some of the apes they are poorly developed and sometimes not present.

4. That they lighten and increase the mobility of the head. The study of comparative anatomy strongly favors the view that pneumatization of bones is for the purpose of combining strength with lightness. This is well seen in the larger mammals. For instance, in the elephant, where the massive head with its relatively small cranial contents has to give powerful insertions to a musculature which will move the head and trunk, we find the air chambers of huge proportions. In the apes the small head with the small cranial contents and the reduced amount of musculature is associated with a diminution and in some cases with an absence of sinuses. In man the increased size of the brain to be protected and supported, is accompanied by increase in the size of the sinuses.

At present the weight of evidence appears to me to support this hypothesis. Yet there are some points which make one hesitate dogmatically to assert that this is their only function. Chief among these is the fact that developmentally they are outgrowths of the nasal cavity and so primarily may be supposed to form a functionating part of this cavity—respiratory or olfactory. A complete solution can only be hoped for, from a study of embryology and comparative physiology.

DISCUSSION.

Dr. E. Fletcher Ingals:—This Society is to be congratulated on having a member who is willing to devote his time to research in a subject about which we know so little, and need to know so much.

Dr. Charles M. Robertson:—I do not quite understand the litmus paper experiment. It seems to me that if the doctor put litmus paper into the opening made in the frontal sinus, the air would pass through there during inspiration.

Dr. Wilson:—The glass tube is put in airtight, so that no air can get in.

Dr. Robertson:—As regards the function of the accessory sinuses, aiding in the resonance of the voice, the only way to determine that would be by making a photograph of the sounds, which is done by the sound waves producing vibrations and recording them on an apparatus made for that purpose. I think that the presence of anything in the nose certainly does impair the resonance, and it has always seemed to me that the accessory sinuses were particularly adapted to increasing the resonance in the voice.

So far as the olfactory function is concerned, I am sure that no olfactory nerve filaments are to be found in the membrane lining these cavities. As for warming the air that is inspired, one can see how that would be possible if the air came in contact with the mucous membrane, but if these accessory sinuses possess any function at all, it is probably that of regulating the resonance of the voice.

Dr. Edwin Pynchon:—It seems to me that one of the functions of the sinuses is to lighten the bone in such a way that the brain does not suffer by concussion in case of external injury.

As regards the influence of the sinuses upon vocal resonance, they undoubtedly contribute much to that purpose. Of all races, the Africans have sinuses

as large as any, and the singing voice of the African is known to be very melodious.

As regards the function of warming and moistening the air, it appeals to me very strongly. In fact, I fully believe that this is the chief and principal function of the sinuses.

As regards the direction of the air current in inspiration and expiration, it is well known from investigations made by Freeman, of Philadelphia, and others, that the inspired air passes chiefly about the middle turbinal. In fact, as it strikes the middle turbinal it is divided so a portion thereof goes through the superior meatus. Why does the air go in this direction? The openings of the anterior nares are almost horizontal and if air is drawn in slowly, it may not take that direction; whereas when it is drawn in fully it will go toward the roof of the nose. Why is it that the air goes out through the lower part of the nose in expiration? The air in its outward passage strikes the vault of the postnasal space, which tends to direct the current toward the inferior meatus.

Dr. J. Holinger:—The functions of the accessory sinuses of the nose in one animal can not be compared with the functions in every other animal. Take, for example, the elephant, where the system of frontal sinuses is developed to such an extent that the whole front and upper part of the large skull is a mass of sinuses. The object undoubtedly is to create an immense crust over the back of the head for the insertion of the muscles of the neck, governing the motions of the head and the trunk. The function of the sinuses in the elephant is merely an architectural question because of the need of a large place of insertion for these muscles.

Another point is the great difference in size and relative position of the sinuses existing among the various races of men. I think we hardly made a fair start in the investigation of these problems by taking accurate measurements of the width and heighth of the face, compared with the width and heighth of the nose. This so far has produced no other result than to show that the width of the face is proportionate to the width of the nose. In other words, that the width of the maxillary sinuses are equally proportionate to the width of the face. There are such great differences in the architecture of the skulls of different races that I think we might by comparing those factors get at the points equally as well as by comparing the skulls of the different animals.

Dr. William L. Ballenger:—I want to ask Dr. Wilson a question. We are at times placed in a position where we must operate on these sinuses. From a physiologic point of view, what harm might result from a complete exenteration of the ethmoidal sinus?

I frequently have had patients where, after removing the ethmoidal cells, the sense of smell was instantly restored. Of course, that was because of the closure of the olfactory fissure before operation, and the diffusion of odorous particles did not take place.

Dr. Wilson (closing the discussion):—I am very glad that my paper has elicited such free expression of opinion on this subject. Of course, my investigations have just started. On looking up the literature on physiology of the sinuses, it proved to be very small in amount. In discussing the subject one has to remember that it is not enough to frame an hypothesis which may appear satisfactory in one or two animals, or even in man. What we want is a theory that will be generally applicable to these accessory sinuses. The theory which best satisfies these conditions at present is the one which holds that these sinuses lighten the weight of the head and increase its mobility. To object to such a theory by statements based on belief in the efficacy of some other hypothesis is not enough. For instance, it is not enough to say that one believes that the lining membrane of these sinuses imparts warmth and moisture to the inspired air. One must give foundations for the belief.

As to the question of these being vestigial remains of olfactory organs, I do not know that that will help us out. Simply to mention such looks to me like begging the question! so far, not the slightest proof has been advanced in support of this contention.

Dr. Pynchon raises an important point when he draws attention to the question of the projection of the superciliary ridges as an index of the size of the frontal sinuses. That their size may bear some relation to the size of the sinus one must acknowledge, but to regard them as indices would be, it appears to me, to attach undue importance to their prominence and inevitably lead to miscalculations. Anatomically one may find large ridges and by no means corresponding large sinuses; to give but one example, negroes have marked superciliary ridges, but as a rule small frontal sinuses. The other point Dr. Pynchon raises, that normally the main current of inspired air rises as high as the superior turbinal, I can not agree with. I should place it in relation to the middle turbinal.

I have left Dr. Robertson's remarks to the last, since I recognize here a difficulty in giving satisfactory proof. We have no evidence that these sinuses act as resonators—as cavities accessory to the nose they may. Secondarily do so by modifying the amount of air space in the upper passages so as to affect resonance. Their position, their variations in size, the character of these openings speak against their main function being to act as resonating cavities; and in addition the true resonators are developed in relation to the sound-producing organ—the larynx. I do not know that the voice has been photographed before and after sinus operations.

I have been asked what harm could come from removal of the ethmoidal sinus. Speaking generally, one would say that the primary harm would come from destruction of the olfactory mucous membrane, necessitating injury to its lymphatics which connect so closely with the subarachnoid and subdural spaces. Further the relation of the posterior ethmoidal cells with the optic nerve has to be thought of.

WHAT CONSTITUTES AN ADEQUATE PREPARATION FOR PRACTICE IN A SPECIAL FIELD?

(Abstract.)

Geo. E. Shambaugh, M.D.

Work in the several special fields has been carried so far beyond the scope of the work that the internist is prepared to do that the necessity for special training for the men entering the practice of the specialties is apparent. The development of the specialties has come about so rapidly that this demand for special training is necessarily a recent one. It presents a problem in medical education we have not yet solved. A few weeks' or months' attendance on clinics in our so-called postgraduate schools does not in any measure constitute an adequate preparation for the man entering the practice of a specialty. The training of the specialist should be as much in the fundamental sciences of his specialty as in the clinical side. In the training of the general practitioner we require a knowledge of general anatomy, general physiology, embryology and pathology. It is just as essential that the specialist in order to have a clear understanding of the clinical problem of his specialty should have a thorough training in the special anatomy, the special physiology, embryology and pathology of the field with which he has to deal.

This work should be put on the basis of genuine graduate work; that is, it should lead up to the frontier line where the actual research is being done and where the unsolved problems in the subject can be presented and discussed. This work can be properly done only in our universities. It could be so arranged as to lead to the granting by the university of a higher degree in medicine, the degree of doctor of philosophy, for example, in ophthalmology, or in otology, just as is now being done for the men working in the other sciences, as physics, chemistry, etc. The offering of such courses even by one or two of our best equipped universities would serve to stimulate higher ideals and better preparations in physicians all over the country entering the practice of the specialties. Our great need is not for more specialists, but for properly trained specialists.

DISCUSSION.

Dr. Norval H. Pierce:—I have been teaching in postgraduate work for over fifteen years, and I very soon found how inadequate such work is. It is a shame that in this great city postgraduate work has gone to such absolute misuse. That it is foolish for a man to come here and study six weeks at the most and expect to master a specialty that requires at least considerable manipulative dexterity is apparent. I do not recall a single instance where I have regarded the work done by such men who came to my clinics as in any way satisfactory either to me or to those men for my trouble. It is largely a waste of time. There is neither beginning nor end. It is all chaos. I am sure that every man who has had any experience in this line of work will agree with me the time has come when such a paper as Dr. Shambaugh's is exceedingly timely.

How many of us are familiar with the science of sound? How many of us realize the difference between mass vibration and molecular vibration? How essential these problems are to the comprehension of our daily work? Therefore, I am in hearty sympathy with the proposition that physics as relating to sound should be a requisite in the training of the otologist, as much so as is the embryology and the anatomy of the parts. I wish to voice my appreciation to Dr. Shambaugh for this timely paper.

Dr. J. G. Wilson:—We are all agreed, Mr. President, that the improvement of postgraduate instruction is one of the most urgent needs in present-day medical education. This Society ought to do all in its power to further the object that Dr. Shambaugh has so well stated in his paper. I feel confident that if a representative body of medical men in Chicago should ask the universities in the state to assist in the advancement of postgraduate work, these universities would listen with a great deal of sympathy to the request. But the sincerity of the request must be evident in the hearty, unselfish cooperation of each society and of each school. To attain to this we require to educate not only the general practitioner but the specialist, and I look upon Dr. Shambaugh's paper as a necessary step in that direction. So far as a special degree is concerned, I regard that of less importance. No doubt such a degree would give a hall-mark to a man, indicating what he has done; but I believe its possession would be apt to be overestimated. What is wanted at present is opportunity to work in the branches directly bearing on our specialties. Is it not possible to have all the schools in Chicago interested in laryngology and otology agree to organize and recommend to their graduate students special lectures on scientific subjects and special practical courses in anatomy, physiology and pathology, bearing directly on these special subjects—such lectures and courses to be given by competent men who should receive sufficient remuneration? Such courses might very well fit in with and form a valuable adjunct to the clinical instruction which these schools are at present so well giving.

Dr. C. M. Robertson:—It is a shame that men can come to this city to take up a specialty, stay six weeks or even less, and then feel that they have mastered it all. There is a movement on foot now in the University of Chicago, where Dr. Shambaugh and Dr. Pusey are doing work of this kind, and in the Northwestern University there is under advisement at the present time a course to elaborate such a scheme as this. The only question is, How much can you force the undergraduate student to do in this work, and also how can you teach postgraduate work in an undergraduate school?

As regards postgraduate teaching, men do not care to spend more than six weeks here, although the facilities for teaching are just as good as they are elsewhere. Many of these men go to Germany, even though they do not speak or understand German. It seems to me that the postgraduate schools of this city are at the end of their string. That is shown by the fewer number of students coming here. They are not coming because they can get better work elsewhere, and yet our facilities are the equal of any. It seems to me that courses in pathology, physiology and anatomy are very essential. I tried to arrange such a course in the policlinic, but when I submitted it, all the men in the school jumped on me

and said that I was trying to advance myself at the expense of others. So I dropped it.

Every member in this society ought to bring his influence to bear on the colleges in this city, so that every man might take up a certain amount of work, if desired, and become proficient in it. If he inclines to laboratory work, let him become an expert in that work. So, too, with clinical and dead-house work. The universities all seem willing to do it, and some of the postgraduate schools do it. Those that are run for profit may not be willing to do this, but even if they are not, the students would go to schools where they can get the work they are after.

Dr. Joseph C. Beck:—The solution that appeals to me is one recommended by Dr. Price, of Philadelphia, a gynecologist of note. He believes that every specialist should take into his service a young graduate and teach him his specialty. I have followed this method ever since I have been practicing a specialty, keeping the young man with me for at least three years. The third man is still assisting me, and a second man has begun his course. I consider the first man a specialist. I believe Dr. Shambaugh's suggestions are excellent. Every man contemplating special work should take up anatomy, pathology and physiology as outlined by Dr. Shambaugh. I would suggest, with reference to pathology, that we are very negligent in not studying the tissues which we remove, but throw them away. Of course, we have not time to work them up, but I am sure that it would be possible to have the student whom one is developing as a specialist to examine all tissues. That would do much for pathology.

In regard to the education of postgraduates, it has been my experience that these men are not particularly interested in the removal of tonsils and adenoids, and the use of the spray. Pathology and diagnosis are sadly neglected. If there are not enough schools to train specialists, there are plenty of specialists who can do this work.

Dr. J. Holinger:—There is one point which I think we overlooked, and that is the financial question. If a man has devoted himself up to his twenty-fifth year to the study of medicine, he can not, as a rule, afford to work two or three more years without any remuneration, and at an increased expense to himself. The undergraduate student can live cheaply, but after graduation he can not do this. He must have a good appearance and he must live in good quarters. Therefore, assistants in large clinics ought to be paid some salary. The attending man also ought to obtain some compensation, that he can give a certain amount of time to this work of training competent assistants.

Dr. Shambaugh (closing the discussion):—I am, of course, much pleased with the discussion my paper has received, and most of all because it has brought out the fact that we are more or less of the same opinion in regard to the need for more adequate instruction to the men entering the practice of our specialty. This field of graduate work is a comparatively new one, and the problem of giving proper training is still to be solved. I am a firm believer that in the solution of this problem Chicago will play an important part. The discussion of this evening shows that the men in this Society have the first requisite necessary to bring about a proper solution of the question; i. e., we have an appreciation of the great need for such work. The men in this city who would participate in the development of proper graduate training for the prospective specialist must realize, first of all, that it will be expected of them to devote enough time and thought to some particular branch of our work, so as to command from others the recognition that they are an authority in this particular thing. One thing is certain, the men of this country who are entering specialties and limit their preparation to a six weeks' postgraduate course or to a few months' trip abroad are not adequately prepared. The mere hanging out of a sign does not make a specialist of a general practitioner. We are coming very rapidly to the stage where to be recognized as a specialist the physician will be expected to have made such a careful study of some branch of the specialty that he will be able to make a contribution to our knowledge of this field. It is not material that this con-

tribution should have a special practical bearing as far as we are able to see at this time. A specialist who makes a contribution to the embryology or the histology of the part of the organ we have to deal with must of necessity have familiarized himself in a large measure with the whole anatomy of this region; otherwise he would be unable to prosecute successfully any piece of research, however technical.

JOINT MEETING OF THE CHICAGO SURGICAL SOCIETY AND CHICAGO MEDICAL SOCIETY, APRIL 10, 1907.

Dr. D. W. Graham, President of the Chicago Surgical Society, in the Chair.

Symposium on Surgery of the Nervous System. 1. Technic of Exposing the Operative Field in Surgery of (a) The Brain, by Dr. Jacob Frank; (b) The Spinal Cord, by Dr. A. E. Halstead. 2. The Present Status of Surgery for Tumors and Localized Infections of the Brain and Spinal Cord (a) Symptomatology and Diagnosis, by Dr. Archibald Church; (b) Operative Treatment and Post-Operative Results, by Dr. J. B. Murphy. 3. Closure of Cranial Defects, by Dr. Weller Van Hook. 4. Surgery of the Trifacial Nerve, by Dr. M. L. Harris. 5. Nerve Grafting, for Infantile Paralysis, by Dr. E. W. Ryerson. Discussed by Drs. Julius Grinker, L. L. McArthur, A. D. Bevan, Carl Wagner, and, in closing, by Dr. Jacob Frank.

Dr. Jacob Frank discussed the technique of exposing the operative field in surgery of the brain. After describing the operative technique, he said that the various operations for opening the skull for the removal of tumors or the evacuation of localized infections may be divided into the following groups: 1. simple resection of the skull. (a) With the trephine; (b) with the chisel and mallet. 2. Osteoplastic resection of the skull. These divisions were discussed at considerable length. He outlined the technique of Wagner's operation.

The method which he uses in making the osteoplastic flap is as follows: The usual skin incision is made through the soft parts, and the line for making the bone flap selected, which is about one-half inch from the skin margin. Before using the linear craniectomy forceps, a small opening in the skull is made with a small trephine or chisel and mallet. Into this opening the forceps are introduced, and the formation of the bone flap begun. Whenever a place is encountered where the forceps are cramped, the line is enlarged a trifle, with a small trephine or chisel. This allows freedom for the linear craniectomy forceps to continue the further biting away of the bone until the desired amount is cut through, leaving a base undivided. At this point, the bone is chiseled through subcutaneously, fractured, and the flap lifted back. Trephining or chiseling over the sinuses must be avoided; but should it be necessary to remove the bone covering any part of the sinus, it can be more safely removed by a rongeur forceps. The dura is now opened by the crucial or flap method. With a sharp-pointed hook the membrane is raised and a small incision made. This is continued with a blunt-pointed scissors. If the flap method is employed, the line of incision should be one-quarter inch from the margin of the bone, and it should be planned so as to avoid cutting across the trunks of the blood vessels. As the pia mater is very vascular and very thin, it can not be handled as the dura by incising, but must be opened by teasing it away. The control of hemorrhage from the scalp is temporarily checked by the constrictor, as described above, and permanently controlled by first applying T-shaped forceps, and then by ligation. The suturing of the wound also helps to control the bleeding. The hemorrhage from the bone can be arrested by Horsley's wax; pressure with gauze; plugging the bleeding point with catgut; driving into the diploë decalcified bone pins; gently squeezing together the tables of the skull with a strong bone forceps, and by hammering the chisel against the bleeding point. The bleeding from the dura is easily controlled by ligation, and from the pia mater by pressure and teasing it apart.

The drainage usually employed is horsehair or silkworm gut. Gauze rubber tubing and gutta percha tissue are used for infective cases.

Dr. A. E. Halstead discussed the technique of methods for exposing the spinal cord under the head of laminectomy, subperiosteal laminectomy, osteoplastic resection of the spine, etc.

In the cervical and lumbar regions, where the concavity of the spine is posterior, he thinks that laminectomy is the operation to be preferred. His reasons are:

1. Because posterior concavity of the spine does not permit muscles to drop into the defect made by removing the lamina; therefore, the muscles will not, when contracting, press upon the cord.

2. This operation is much simpler in technique.

3. The muscles are not injured to such an extent as in osteoplastic resection.

In the dorsal spine, in kyphosis, osteoplastic resection may have a place; but the objections to this operation are:

1. Difficulty in securing a symmetrical flap.

2. Permanent injury to the muscles in making U-shaped incision.

3. Danger of sloughing of the osteoplastic flap from inadequate blood supply.

4. In reflection of the flap the extent of exposure of the cord may be insufficient, necessitating extending the resection by removing more laminæ by other means.

5. It is wholly unnecessary in most cases to restore the bony arch of the vertebra by osteoplastic methods. Degeneration of lamina is known to occur in a short time after subperiosteal resection.

THE PRESENT STATUS OF SURGERY FOR TUMORS AND LOCALIZED INFECTIONS OF THE BRAIN AND SPINAL CORD.

Dr. Archibald Church discussed the symptomatology and diagnosis.

Dr. John B. Murphy discussed the operative treatment and postoperative results.

Dr. Weller Van Hook followed with a short paper on "Closure of Cranial Defects."

Dr. M. L. Harris discussed the surgery of the trifacial nerve.

Dr. Edwin W. Ryerson reported (by invitation) six cases of nerve grafting for infantile paralysis. Four of these were available for presentation, one of the others having disappeared, and the sixth being too recent to be conclusive.

One case, of total paralysis of the external popliteal, showed a complete failure one year after the distal end of the external popliteal nerve had been sewed into a longitudinal slit in the internal popliteal.

One case of internal popliteal paralysis, involving the gastrocnemius, soleus and tibialis posticus, showed a considerable improvement in stability and position, the marked calcaneo-valgus being lessened, but no voluntary movements could be distinguished in the affected muscles.

One case of paralysis of gastrocnemius and soleus paralysis, treated by implantation of the small branches of the tibial nerve supplying these muscles into the external popliteal, showed improvement in position and stability, and a definite increase in size and apparent tone of the calf muscles, but no voluntary motion.

One case of paralysis of tibialis posticus, with only very slight power in gastrocnemius and soleus, treated by grafting internal popliteal into external popliteal, showed no improvement, and the previous slight functional ability in the gastrocnemius and soleus is destroyed.

These cases seem to show that the slit method of nerve-grafting is not likely to be successful, in spite of the successes reported by several observers, and it is Dr. Ryerson's opinion that it will be found advisable to slice upward a thin flap in the sound nerve, so that at least a partial end-to-end approximation can be made. The chief objection to this method is that the portion sliced upward may contain the fibers supplying some important muscles, since we have no means of differentiating the fibers. In the case of the internal popliteal, however, the anas-

tomosis could be made below the place where several of the gastrocnemius nerves are given off, and thus some of the danger might be avoided.

Dr. Julius Grinker:—I wish to discuss two or three points in diagnosis which are sufficiently important to require special emphasis. The first point is that generalized epileptic fits are not always to be classed as idiopathic epilepsy; on the contrary, they sometimes appear as an early sign of brain tumor. Most writers on brain tumors, and notably Oppenheim in his classic monograph, mention this point, but it is often overlooked. Quite recently I had under observation a case of brain tumor in which generalized epileptic convulsions constituted the only important symptom for a period of eight years. During the past year complete blindness due to secondary optic atrophy appeared and a left-sided hemiparesis slowly developed. Headaches have been present almost from the beginning, but were not continuous and seemed to have been provoked by alcoholic and other excess. A close interrogation of the patient brought out the statement that headaches have even antedated the epileptic fits. Tumor was overlooked, because the fits were considered of the idiopathic variety and the headaches were not brought into relation with other symptoms.

The second point to which I wish to direct attention is that the Jacksonian fit is not invariably a sign of gross brain disease, though it is a most valuable sign when it occurs in conjunction with other symptoms. Some time ago I recommended operation in a case of unilateral epilepsy which corresponded closely to the Jacksonian type and in which a probable diagnosis of brain tumor had been made. Careful exploration of an entire hemisphere proved the absence of neoplasm. Because of the extreme rarity of unilateral idiopathic epilepsy it is likely to be mistaken for focal brain disease.

In connection with the subject of brain injuries I wish to state that patients in a comatose condition are often sent to a general hospital with the diagnosis of uremia, or they are sent in as common "drunks." Each such case should be carefully examined, as it may prove to be a case of brain injury, notwithstanding the absence of external evidence of trauma. In this way we can save many lives. Recently I saw a case in the County Hospital, in which there were aphasia and localized fits in the right half of the face and in the right arm, appearing at intervals of a few minutes. I thought of subdural hemorrhage and recommended operation. The patient's life was thus saved.

Within the last few days I saw, in consultation, a patient who had been apnasic for six or seven days. The Babinski toe phenomenon could be readily demonstrated and there were seen localized twitchings beginning in the face and extending to the arm and leg of the right side. As the before mentioned symptoms appeared rather suddenly, the entire symptom-complex pointed to hemorrhage over the left cortex. I advised immediate operation which proved the diagnosis by the finding of an immense blood clot over the Rolandic area and Broca's convolution.

Dr. L. L. McArthur:—Dr. Halstead stated that new bone would be produced after subperiosteal restriction of the spinal vertebra. McEwen has demonstrated that only when the periosteum is inflamed do the osteoplastic cells exist in sufficient number to be capable of reproducing bone, and that normal periosteum makes a fibrous deposit only.

In regard to the filling in of defects with bone taken from the same patient, the impression ought not to go out that ossific union will not occur if the bone be replaced. Dr. Frank will recall having made a postmortem on a patient from whom a two-inch trephine button had been removed while searching unsuccessfully for a cerebral tumor. When the patient died, two years later, he found that this two-inch trephine button had healed in place perfectly.

In regard to the Abbe operation, I believe it is much better than that of ganglionic removal. I have three times resected the nerve intracranially after the method of Abbe, but instead of implanting the rubber dam I have used gutta percha tissue, thinking that that was what Abbe recommended. These patients have been without a recurrence of the pain for over three years.

There is another point that I am pleased was brought out again, because I feel that I was a pioneer in that line, having drained the lateral ventricles for hydrocephalus, but at a more superficial layer than is recommended by Ballance. Ten or twelve years ago, in my own practice, and in the case of some of Dr. Church's patients, I drained the ventricles with a tube, the flange of which rested under a large scalp flap instead of resting within the skull, for the purpose of letting the fluid out into the cellular tissues of the neck. It succeeded in relieving the convulsions and other symptoms. One case of hydrocephalus, occurring in a child 7 or 8 years of age, had a very large head, the size of which was not diminished by the operation, although the child was relieved and remained well for two or three years, when it died of summer diarrhea.

In another case of drainage beneath the scalp a peculiar thing happened. While I drained on one side only, that side of the head remained tense and grew. A closure of the opening between the two lateral ventricles was suspected.

Dr. Arthur Dean Bevan:—It is not so very many years ago that most of us were rather pessimistic about the surgery of the brain and cord. There has been enough advance made in this line of work and enough definite results have been obtained to warrant our being more optimistic than we were formerly. When you weigh all the evidence, the absolute hopelessness of brain tumor, on the one hand, and even the small possibility of good coming from operation, on the other hand, I think we must all urge operative interference more frequently, especially when we consider the splendid results, so far as relief is concerned, that can now be obtained from the decompression operation. Many of the old-time operations which were exploratory resulted in little good, but to-day, when the tumor can not be found, an enormous amount of comfort can often be given the patient and his eyesight maintained for months and years by a decompression operation.

One point impressed me very much, indeed; that was Dr. Murphy's remarks with regard to searching for a tumor with a sharp needle. I also have found that it is much better to use a blunt instrument like a grooved director. The different sense of resistance between ordinary brain tissue and tumor tissue will often enable one to locate the latter definitely.

With regard to laminectomy, I am very much opposed to the osteoplastic operation. I believe it is a dangerous one. It is not indicated very frequently, and the removal of bone with a saw or chisel is also a bad procedure. The simplest plan is to bite away the laminæ with rongeur forceps. Anatomically, the laminæ are of no value. It is simply a protecting wall for the cord, furnishing practically no support to the spinal column. It is simply the arch that is removed in a laminectomy, and quite a number of them can be removed without interfering with the integrity of the spinal column. Such a procedure is to be preferred to osteoplasty, because when you start in with the determination to operate at a certain point you frequently find that you must go up one or more vertebræ, which you can not do in osteoplasty as well as you can do with a simple incision.

Dr. Carl Wagner:—The point mentioned by Dr. Grinker, that every case of unconsciousness brought to the hospital without an accurate history should be considered from the standpoint of view of brain lesion, is worthy of note. This was brought to my attention ten years ago, when a patient whom I had in the hospital under observation with a fibroid of the uterus died suddenly. The interne said that it was uremia, the attack coming on without warning while the patient was walking about. It occurred to me that there must have been some brain trouble. I did a postmortem and found a tumor of the frontal lobe. I reported the case to this society and demonstrated the specimen at that time. There had been very few symptoms during the life of the patient, practically only a little headache, and yet the tumor, a gliosarcoma, was a large one.

Regarding the implantation of decalcified bone chips into the cranial defect, I want to call your attention to the very elaborate work done in Italy by the late Professor Sacchi, of Genoa, who said that it is not only useless to implant bone chips, because they are absorbed, but in many cases give rise to suppuration.

Dr. Jacob Frank (closing the discussion):—In 1887, when I was doing brain work, I said then that surgically the surgery of the head is all right, but that the postoperative results are all wrong. Most of the patients either die shortly after the operation, or they are relieved of their symptoms, but never again become useful members of society. The surgery of the brain stands to-day where it stood then. We must look for some means of mutilating the brain without leaving the patient in a state where he can not earn his living.

As to searching for tumors of the brain, I have looked for them and missed them, and I have seen other surgeons in Chicago do the same thing. I have come to this conclusion, that needles and trocars are of no value whatever in looking for tumor of the brain. If the neurologist says he has localized the tumor, it is much better and causes less disturbance to the brain to go in and open up the sulci with the finger or the end of a spoon. As a rule, they lie about half an inch from the surface of the cortex, and you can detect them much easier with the finger than with the needle. I agree with Dr. Bevan, that a needle in the brain is a dangerous instrument. It should not be used. I have made postmortems after needling the brain and found a number of small hemorrhages. The best thing is a special grooved director, with a blunt end, and a deep groove. If you have an abscess, the pus will run along the groove.

MADISON COUNTY.

The regular quarterly meeting of the Madison County Medical Society was held Sept. 6, 1907, at the Lutheran Hospital at Granite City, Ill. The meeting was called to order at 2 o'clock by Dr. T. P. Yerkes, of Upper Alton. Those in attendance were Drs. T. P. Foulds, T. P. Yerkes, Waldo Fisher, R. S. Barnsback, G. Taphorn, A. F. E. Schierbaum, J. W. Scott, I. J. Baird, E. C. Ferguson, E. W. Fiegenbaum, Joseph Pogue, F. E. Tully, W. H. C. Smith, C. H. Zoller, O. J. Gwynn, Ralph Niedringhaus, R. W. Binney, R. B. Scott, A. J. Ihne, C. R. Kiser and Nina Polson Merritt. The visiting physicians were Drs. E. F. Baker, of Jacksonville, representative of the State Board of Health; F. O. Johnson, Nameoki; J. R. Sutter, Edwardsville; B. H. King, Granite City; L. G. Burroughs, Collinsville, and B. F. Jones, Venice. Other visitors were Rev. A. H. Almstedt and W. F. McNary, Granite City.

Dr. J. R. Sutter, of Edwardsville, made application for membership and was admitted by unanimous consent. Dr. W. H. C. Smith, of Godfrey, introduced the following resolution, which was adopted by the society after much favorable discussion:

"Be it and it is hereby resolved by the Madison County Medical Society that the influence of this society be exerted in favor of the establishment of a state colony for the care and treatment of epileptics, and that a copy of this resolution be sent to the properly constituted state authorities and a copy of the same be sent to the state medical society for similar action."

Dr. Waldo Fisher, of Alton, then read a very interesting paper on "Menorrhagia," which called out a great deal of discussion, and was followed by an address by Dr. E. F. Baker, of Jacksonville, on the general sanitary condition of the state, especially with reference to smallpox.

A vote of thanks was tendered to both of the above-named speakers for their able efforts. The members of the society extended a vote of thanks to the hospital association for its excellent treatment and hospitality. The meeting was one of the most successful of the year, and those who attended were benefited by the discussion.

E. W. FIEGENBAUM, Secretary.

Edwardsville, Ill., Sept. 9, 1907.

M'LEAN COUNTY.

The September meeting of the McLean County Medical Society, which met in the City Hall on the evening of September 5, was called to order by President Godfrey.

Dr. A. L. Fox reported for the Judiciary Committee that said committee had chosen Mr. W. W. Whitmore as medicolegal attorney for the society; further, that Mr. Whitmore had accepted. Motion made that report of committeee be approved; carried.

Dr. J. L. Yolton reported for the Board of Censors favorably on the names of Dr. Ora L. Thompson of Ellsworth, Dr. W. B. Wakefield of Heyworth, and Dr. Asa R. Freeman of Bloomington.

Dr. J. B. Taylor reported and showed diagrams for two cases: one of injury to eye by a nail, in whica there was a hernia of iris. Operation. Function of organ was preserved.

The other, a case of pin in the larynx, located below and in the neighborhood of the tubercle of the epiglottis. Point sticking up into the tissues in such a manner as to be impossible to catch by forceps. Removed under anesthetic by breaking pin, which happened to be fragile, like a needle.

Dr. Guthrie reported a case of hernia with appendix in sac; also case of atrophy of gall bladder as result of stone in the cystic duct.

Dr. Howell reported a case of straw of whisk broom in the throat; a placenta prævia with calcareous degeneration of uterus, and a case of pernicious vomiting of pregnancy with death.

Dr. R. A. Noble referred to three cases of death from anesthetic in German clinics, in which a postmortem revealed an enlarged thymus gland.

Dr. E. L. Brown reported a case of metrorrhagia which yielded to thyroid extract.

Dr. Guthrie reported on the favorable results of Dr. C. H. Mayo in Graves' disease, from the removal of a part of the thyroid gland, care always being taken not to remove too much, rather reoperate if sufficient amount is not removed by first operation.

Dr. J. B. Taylor spoke of a case of incipient deafness in a girl of about 17 years who had noticed she was unable to hear the telephone distinctly through one ear. Occlusion of Eustachian tube was suspected. Finally the mouth was noticed to be drawn on one side. Case was referred to Dr. Billings, who diagnosed it as brain tumor. Case terminated fatally. Autopsy revealed a sacculated tumor under left lobe of cerebellum, containing substance like yolk of an egg. The brain was water-logged.

Dr. Godfrey reported three cases in which safety pins had been swallowed.

The above reports were brought out largely as the result of our quiz, which was an innovation for our society and which was heartily responded to and universally commended.

Bills to the amount of $18.95 were read and approved.

Those present at the meeting were: Drs. Godfrey, J. B. Taylor, Carr, A. L. Fox, Lee Smith, Chapin, Williams, Brown, R. A. Noble, R. D. Fox, Howell, Guthrie, Sargent, Hull, Elder, J. L. Yolton, Vandervort, Sloan, Copenhaver and Rhodes.

Adjourned.

O. M. Rhodes, Secretary.

MORGAN COUNTY.

The Morgan County Medical Society held its regular meeting at the Library Aug. 8, 1907, at 8 p. m., President Dr. E. L. Crouch in the chair. Eleven members present.

Dr. Ogram was elected temporary secretary in absence of Dr. King.

Dr. Day proposed the name of Dr. Bradley to membership, which was laid over to be reported on at the next meeting.

Dr. Milligan reported a case of quinin poisoning in a child with severe symptoms, also spoke of two other cases.

Dr. Reid reported a case of rash from 2 gr. doses of iodid of potassium.

Dr. Crouch reported a case of urticaria from the use of quinin.

Dr. Bowe reported a case of disease of parotid gland due to infection, also a

case of bulbar paralysis and parotid gland infection. Both cases had infection from wearing false teeth.

Dr. Crouch spoke on parotid gland infection following erysipelas.

Dr. Day reported the case of Dr. Burkholder, who had umbilical hernia as seen July 22, which was reduced by hot applications, but afterwards returned, and fever followed and later the abdomen was opened and pus and fecal matter found in cavity and a perforation the size of a half-dollar in the bowel, which was attributed to tearing of some of the adhesions which had formed from former appendicitis, as it was situated in the cecum. The patient seemed to improve for a time, but later died from myocarditis or endocarditis.

Dr. Campbell read the paper of the evening on "Clean Obstetrics."

Dr. Reid thinks he has as good results in the patients' homes as in the hospital, as there are not so many septic germs in the home.

Dr. Thompson thinks cleanliness may be overdone.

Dr. Day says that the acid secretions of the vagina overcome the infectious germs often.

Dr. Bowe says that Nature is the best obstetrician and that most infection is due to doctors.

Dr. Bartlett thinks clots, membranes, etc., become decomposed and cause infection and urged that they be removed, if necessary, by the introduction of the hand into the uterus.

Dr. Bowe reports, on vacation or picnic trip of physicians and families, that the expense is too great for our society to go to the river and secure a steamer.

A. J. OGRAM, Secretary Pro Tem.

ROCK ISLAND COUNTY.

The usual August meeting of the Rock Island County Medical Society was held at Black Hawk's Watch Tower Tuesday, August 13, at 6:30 p. m. After supper, in the absence of the president and vice-president, Dr. Eyster was elected to act as temporary chairman. The minutes of the June meeting having been read and approved, the names of Dr. C. F. Freytag, of Rock Island, and Dr. A. S. Goldstone, of East Moline, were proposed for membership. A letter was read from Dr. G. E. Baxter, assistant editor of the ILLINOIS MEDICAL JOURNAL, in regard to a continuous advertising directory in that paper of the hospital and sanatoria in the State of Illinois. It was moved and carried that a committee of three be appointed to draw up resolutions in regard to the establishment of state sanatoria for the tuberculous. The Chair appointed Dr. Sala, Dr. Eddy and Dr. R. C. J. Meyers. The scientific program then followed: Tuberculosis of Childhood, Dr. Gardner. The discussion was opened by Dr. Banning, a visitor from Davenport, followed by Drs. Eyster, Sala, R. C. J. Meyers and Ostrom. Dr. Ostrom read a paper on the Diseases of the Tongue, which proved very interesting. The anatomy of the tongue, accidents that befall it, cysts, tumors, foreign bodies and abscesses were all considered. Specimens of sialoliths were shown. The society then adjourned. Members present: Drs. Eyster, Sala, Dart, Wriggins, Eddy, Hollowbush, Johnson, Martin, Asay, Gardner, Morgan, Williams, R. C. J. Meyer, Ostrom, Rochow, Yontz, Browning, and Snively. Visitors: Dr. Banning of Davenport, and Dr. Goldstone, of East Moline.

VERMILION COUNTY.

The Vermilion County Medical Society held its regular meeting at Danville, Ill., September 9, and it was called to order by the vice-president, C. E. Wilkinson, at 8:30 p. m. Programme: Anatomy and Physiology of the Heart, with Fetal Circulation, Dr. F. W. Barton, Danville. Clinical Demonstrations of Pathological Heart Sounds, Dr. C. E. Wilkinson, Danville. Latest Opinions as to the Effect of Digitalis on the Heart Functions, J. B. Morton, Ridgefarm. Dr. Barton's paper was a concise review of the subject and the balance of the programme

was unavoidably interfered with. Dr. E. E. Clark partly filled in the vacancy with a short paper on The Falsetto or Eunucoid Voice. Some interesting case reports on puerperal infection created an interesting discussion.

E. E. CLARK, Secretary.

WHITESIDE COUNTY.

The regular bimonthy meeting of the Whiteside County Medical Society was held at Morrison, Ill., Aug. 7, 1907, at 1 o'clock p. m. The following program was given: Etiology, Bacteriology and Pathology of Cerebrospinal Meningitis, Dr. Durkee, Fulton; Symptoms and Diagnosis of Cerebrospinal Meningitis, Dr. Fitzgerald, Morrison; Complications and Treatment of Cerebrospinal Meningitis, Dr. Nowlin, Morrison. The subject was discussed very fully by all present. The meetings of the past year here have been growing in interest and attendance. Next meeting at Sterling Oct. 2, 1907, when a symposium on Summer Diarrheas will be given.

NEWS OF THE STATE.

A case of smallpox is reported from Kankakee.

A number of cases of typhoid fever are reported in Decatur.

Dr. Joseph B. DeLee, of Chicago, has returned from Europe.

Dr. Arthur D. Bevan, of Chicago, has returned from Europe.

Dr. and Mrs. Frank Allport, Chicago, have returned from Europe.

Dr. and Mrs. Julien E. Hequembourg have returned from Rye Beach.

Dr. John W. Hairgrove, Jacksonville, is reported to be ill in Chicago.

Diphtheria is reported in St. Anne, where three cases have appeared.

Dr. and Mrs. Philip Kreissl, of Chicago, have returned from Europe.

Dr. Edward V. L. Brown, of Chicago, sailed for Europe in September.

Dr. and Mrs. Daniel N. Eisendrath, of Chicago, have returned from Europe.

Dr. and Mrs. George E. Fosberg, Chicago, spent September in Atlantic City.

Dr. Ernst B. M. Mammen and family, Bloomington, Ill., are visiting in London.

Dr. Ora D. Holland and family, Streator, sailed for Europe September 11.

Dr. and Mrs. John B. Murphy, of Chicago, have returned from Yellowstone Park.

Dr. John Edward Rhodes, of Chicago, has returned from North Manitou Island.

The first meeting of the Chicago Ophthalmological Society will be held October 14.

Dr. and Mrs. Archibald Church, of Chicago, are spending September in the Adirondacks.

Dr. T. M. McMicheal, Monmouth, who has been ill with erysipelas, is reported to be better.

Dr. and Mrs. Frederick Gillette Harris, of Chicago, will remain abroad until January.

Dr. Charles V. Moorhouse, Marietta, recently suffered severe injury by a kick from a horse.

Dr. James M. Tinsley, Philo, sailed from Liverpool, August 15, on his return from Europe.

Dr. J. H. Butler, Hartsburg, is ill at the Deaconess Hospital, Lincoln, with appendicitis.

Drs. Aroid E. Kohler, Moline, and Carl O. Bernhardt, Rock Island, left for Mexico September 2.

Mayor Roy R. Reece, of Springfield, has issued a general order calling upon the citizens to clean up.

Dr. Edward W. Fiegenbaum, Edwardsville, was seriously injured in the left leg in a fall August 20.

Dr. Marie A. Fellows suffered severe internal injuries in a collision between street cars September 5.

Dr. and Mrs. R. M. Charles Ball, Monmouth, have returned after a summer spent on the Pacific coast.

Dr. Weller Van Hook, of Chicago, was recently elected general secretary and treasurer of the Theosophists.

Dr. C. E. Betz, St. Joseph, was operated on for pleurisy with effusion at Burnham Hospital, Champaign, August 15.

Dr. Stanley Thomas, of Chicago, has been appointed assistant at the Minnesota State Hospital for Insane, St. Peter.

Dr. John Segsworth, Wilmette, who was badly injured some weeks ago by being thrown from his buggy, has recovered.

Dr. F. B. Clark, Elgin, has been appointed assistant physician at the Illinois Western Hospital for the Insane, Watertown.

Dr. Samuel A. Graham, chief of staff of the Eastern Illinois Hospital for the Insane, has resigned and will enter practice at his home in Clinton.

Dr. Ernest W. Potthoff, Oak Park, dislocated his neck by a fall when hurrying to make a professional call September 6, and is at the Oak Park Hospital.

Dr. Arthur E. Prince, Springfield, has purchased property in Bloomington at the cost of $35,000, on which he will erect a building for a sanitarium.

Dr. James W. Pettit, Ottawa, has been appointed delegate from Illinois to the International Congress on Tuberculosis, to be held in Washington in 1908.

Dr. Joseph R. Waldmeyer, of Chicago, was attacked by a delirious patient August 18 and received a number of scalp wounds and a fracture of the left arm.

Dr. Omas A. Kell has been appointed chief of the medical staff of the Illinois Eastern Hospital for the Insane, Hospital, vice Dr. Samuel A. Graham, resigned.

Dr. Elvin F. Baker, Jacksonville, inspector of the State Board of Health, discovered five cases of smallpox in Kilbourne and ordered a quarantine established.

Dr. Haim L. Davis, superintendent of the Detention Hospital, Cook County, is visiting eastern cities to inspect the methods employed in the care of insane in incipient stages.

Dr. Joseph C. Dodds, Champaign, has been appointed district surgeon for the Illinois Central Railroad between Gilman and Effingham, vice Dr. Henry E. Cushing, deceased.

Announcement has been made of the approaching marriage of Dr. Howard L. Metcalf to Miss Elesa Regina Mueller, both of Springfield, to be solemnized the latter part of October.

Dr. Joseph DeSilva, Rock Island, recently appointed a member of the board of trustees for the Illinois Institution for the Feeble-minded, Lincoln, has been selected president of the board.

Dr. W. G. Bain, bacteriologist of the state board water survey department at the University of Illinois, Champaign, has accepted the directorship of the laboratories of the State Board of Health.

Dr. Eugene Cohn, a member of the staff of the Illinois Eastern Hospital for the Insane, has resigned to become assistant superintendent of the Illinois Southern Hospital for the Insane, Anna.

Dr. G. H. Micheal Company, Cleveland, Ohio, have recently issued a unique, reliable and most valuable anatomical chart, which is of value for quick and ready reference, for students and physicians.

Dr. Robert B. Hough, who has been assistant physician at the Asylum for Feeble-minded Children, Lincoln, has gone to Elgin as first assistant physician in the Illinois Northern Hospital for the Insane.

At a farewell reception given to Dr. Samuel A. Graham, retiring assistant superintendent of the Illinois Eastern Hospital for the Insane, September 2, he was presented with a carving set and smoking jar.

Derma Viva Company, Chicago, has been incorporated; capital, $10,000; manufacturing and dealing in toilet articles and medicines; incorporators, Charles F. Paul, Edmond O. Hanson, Robert Humphrey.

Dr. T. H. D. Griffith, Cairo, has resigned from the United States Public Health and Marine-Hospital Service to accept a position as medical inspector and assistant secretary in the State Board of Health, Springfield.

The outbreak of scarlet fever in South Chicago has been kept under control by the active cooperation of the department of health and the police department, with the aid of the doctors and priests in that section of the city.

The Department of Health says that the territory surrounding the steel plant of South Chicago is now the storm center of disease. During the first six days of September six cases of scarlet fever and one case of diphtheria were reported from this district.

Dr. Channing W. Barrett, of Chicago, requests the announcement made that the appearance of his name in the catalogue of the Jenner Medical College in connection with the chair of gynecology is an error and that it was inserted without his knowledge or consent.

The Board of Review of Chicago has announced assessments against hospitals in Chicago amounting to more than $2,000,000, the tax on which will be approximately $27,000. The assessment followed the recent decision that the hospitals come within the scope of the law.

Dr. Aria Louis Derdiger has returned to Chicago from a prolonged stay in the East, where he has taken special work in the Postgraduate School in New York on diseases of the eye, ear, nose and throat, and has also visited the principal hospitals in that city and Philadelphia.

Dr. Charles E. Crawford, Rockford, inspector of the State Board of Health, found ten cases of smallpox in Coal Valley and placed the in-

fected houses under quarantine. The disease is said to have existed in Coal Valley for two months, but had been diagnosed as chickenpox.

Owing to the large number of cases of smallpox at Winslow, Ill., and failure of the authorities adequately to enforce the quarantine regulations, the secretary of the State Board of Health has directed Dr. C. E. Crawford, inspector of the board, to see that quarantine is maintained.

The Health Commissioner of Chicago, it is reported, desires to transform the Isolation Hospital into a hospital where diphtheria, scarlet fever and other contagious diseases may be treated, and to build a new hospital for smallpox at a cost of $25,000 to accommodate 240 patients.

Dr. E. F. Baker, inspector of the State Board of Health, has visited Aurora and investigated the fifteen cases of smallpox now in quarantine. The State Board of Health is taking a firm stand in the controversy between the health authorities and citizens of Aurora regarding the necessity of vaccinating school children.

At a meeting, held September 8, of the Founders' Club of the New People's Hospital Association, Chicago, which is undertaking the erection of a new hospital at Archer avenue and Twenty-second street, several hundred dollars were subscribed by the members. About $35,000 is necessary to complete the building.

The work on the George W. Smith memorial addition to the St. Luke's Hospital of Chicago was commenced August 19. The new structure is to be devoted to paying patients, and the income from this to the charity wards of the hospital. The building will be six stories in height and will contain accommodations for 112 patients.

At the annual commencement exercises of the Illinois Medical College, Chicago, held August 29, a class of nine was graduated. The doctorate address was delivered by Bishop Fallows, who quoted on "Relation of Religious and Medical Science," and the degrees were conferred by Heman H. Brown, M.D., president of the college.

The Health Commissioner of Chicago took drastic measures on August 8 in his endeavor to prevent the spreading of contagious diseases of children, when he revoked the license of C. Bacigalupo, an undertaker, for violation of the burial ordinance in officiating at a public funeral of a child who had died from measles in a public institute.

A new hospital is projected in Chicago to be erected at Twenty-second street and Archer avenue and to be known as the People's Hospital. A rally in behalf of the hospital was held the last Sunday in August, when addresses were delivered by M. B. Madden, E. J. Magerstadt, Charles Lederer, Simon P. Gary, Charles M. Foell and others.

At a meeting of the Madison County Medical Society, held in Granite City September 6, resolutions were adopted that the influence of the society be exerted in favor of the establishment of a state colony for the care and treatment of epileptics, and that a copy of the resolution be sent to the state authorities and a copy to the state medical society for similar action.

By the will of Henry L. Barney, who recently died, the following bequests were made to Chicago institutions: Visiting Nurses' Association, $20,000; Chicago Lying-in Hospital, $10,000; Hospital for Destitute and Crippled Children, $5,000; Chicago Home for Incurables, $5,000; Chicago *Daily News* Fresh Air Fund, $10,000, and Chicago Tuberculosis Institute, $10,000.

The employés of the Postoffice Department in Chicago, in view of the prevalence of consumption among their number, have under serious consideration a plan for the sanitary care of tuberculosis patients belonging to that organization. The plan of sending postoffice clerks afflicted with the white plague to a sanitarium devoted to the special treatment of the disease at Alamagordo, N. M., at the expense of the sick benefit fund, was approved.

The Chicago Isolation Hospital was closed on August 20 because of the lack of patients. Since December 20, seventy-four smallpox patients have been under treatment at the hospital. The largest number registered was on March 20, when twenty patients were in the hospital. Not one of the attending physicians nor one of the thousands of visitors nor of the 2,000 medical students who visited the hospital contracted the disease.

The Chicago Department of Health has issued a warning against typhoid fever, as during the first sixteen days of August thirty-three cases were reported and thirty-one deaths. This is the highest death rate from the disease since 1903. Typhoid may be expected during the remainder of August and all of September. On the conservative estimate that there are ten cases in the city for every death reported, there are more than 300 cases.

During August the mortality in Chicago showed 2,783 deaths, 566 more than the preceding month and 296 more than for the corresponding month of 1906, the respective annual death rates per 1,000 being 15.55, 12.29 and 14.33. The deaths from acute intestinal diseases far outnumbered all others, with 796; then followed consumption, with 222; violence (including suicide), with 199; pneumonia, with 186; heart disease, with 180, and nephritis, with 169.

At a meeting of women in Aurora, August 28, in opposition to the order for compulsory vaccination of children before entering school, Dr. Heman Spalding, of Chicago, made a strong argument in favor of vaccination, which was ill received by the assembly. As a result of the meeting a committee was appointed to draw up resolutions instructing the city council to order the president of the board of health to rescind his order of compulsory vaccination.

The medical department of the John Crerar Library, Chicago, has been moved from the Newberry Library and installed in its new quarters. Gen. Alfred C. Girard, the librarian, announces that the reference library is open as usual to practitioners. The collection now consists of about 41,000 volumes, and 389 medical periodicals are regularly received. The new location of the library is on the sixth floor of the Marshall Field Building, adjoining the reading room.

The ninth annual conference of the American Hospital Association, consisting of leading hospital workers, both physicians and laymen, in the United States and Canada, was held at the Palmer House, Chicago, September 17 to 21, under the presidency of Dr. Renwick Ross, of the Buffalo (N. Y.) General Hospital. Dr. George W. Webster, president of the Illinois State Board of Health, delivered the address of welcome. The annual banquet was held September 18 at the Palmer House.

The Department of Health has divided the city of Chicago into eleven general districts for medical inspection of schools. Each has nine subdivisions. Each district is in charge of a medical inspector. Every district medical inspector will direct the work of nine school medical inspectors and will be held responsible for the health of their district. The school medical inspectors will visit every school in the city every school day in the year, and will, in addition, do all things calculated to safeguard the health of the pupils and of the families. The vaccination of school children will not begin until after October 15.

A new shack, accommodating ten additional women patients, has just been completed at the Edward Sanatorium, Naperville, Ill. This institution for the treatment of early cases of pulmonary tuberculosis was created a year ago by Mrs. Edward L. Gaylord as a memorial to her husband. Recently Mrs. Gaylord gave the entire plant with forty acres of land to the Chicago Tuberculosis Institute. The total capacity is twenty-six patients. There are ten free beds; other patients are treated at $10.00 per week, slightly under the present per capita cost. Application for admission should be made to Dr. Theodore B. Sachs, 287 West Twelfth Street.

BOOK NOTICE.

Human Anatomy, Including Structure and Development, and Practical Considerations, by Thomas Dwight, M.D., LL.D., Parkman Professor of Anatomy in Harvard University; J. Playfair McMurrich, Ph.D., Professor of Anatomy in the University of Michigan; Carl A. Hamann, M.D., Professor of Anatomy in Western Reserve University; George A. Peirsol, M.D., Sc.D., Professor of Anatomy in the University of Pennsylvania, and J. William White, M.D., Ph.D., LL.D.; John Rhea Barton, Professor of Surgery in the University of Pennsylvania, with Seventeen Hundred and Thirty-four Illustration, of which Fifteen Hundred and Twenty-two are Original and Largely from Dissections by John C. Heisler, M.D., Professor of Anatomy in the Medico-Chirurgical College, and edited by George A. Piersol, Philadelphia and London. J. P. Lippincott & Co., 1907.

This beautiful work of nearly 2,100 pages, the product nearly altogether of American anatomists and engravers, is deserving of serious consideration by medical men and students of the present day. In many respects it surpasses the Anatomy of Graves and other European textbooks which have been so much in vogue in America in past years. Adequate consideration of the parts of the anatomy has been insured by the

cooperation of Dr. J. William White, whose ripe experience both as a surgeon and a teacher of surgery has enabled him to point out with unusual force the relations of anatomy to the requirements of the practitioner, and to associate for the benefit of the student, anatomical facts with those conditions resulting from injury or disease that these facts elucidate.

We can recommend the work to the favorable consideration of our readers.

MARRIAGES.

OLIVER J. ROSKOTEN, M.D., to Miss Olga Beseman, both of Peoria, Ill.

WILLIAM RIGHTMAN, M.D., to Miss Toba Fagin, both of Chicago, August 6.

HARRY R. FOLCKEMER, M.D., to Miss Nell E. Byers, of Dallas City, Ill., August 22.

OTTO BALENSIEFER, M.D., Peru, Ill., to Miss Helen Wilkins, of Chicago, August 31.

GEORGE ALBERT GARDNER, M.D., to Miss Charlotte Thayer, both of Chicago, August 14.

EMANUEL ELY SHELLY, M.D., to Miss Ida Olive Brubaker, both of Freeport, Ill., August 20.

STANLEY R. PERKINS, M.D., Mishawaka, Ind., to Miss Cora Atta Hill, of Chicago, September 4.

JOHN DONNINGTON BARTLETT, M.D., Chicago, to Miss Ethel Booker, Helena, Montana, September 4.

WALTER H. ALLYN, M.D., Waverly, Ill., to Miss Helen McMillan Hawley, of Chicago, Ill., August 1.

WALTER WELLMAN GRAVES, M.D., LaSalle, Ill., to Miss Clara Belle Cavell, of Mendota, Ill., September 4.

WILLIAM H. DOOLITTLE, M.D., Woodstock, Ill., to Miss Mary J. McNair, of Winnebago, Ill., in Chicago August 15.

WILLIAM R. FRINGER, M.D., to Miss Alma M. Barter, both of Rockford, Ill., at Grand Cascapadia, Quebec, August 20.

FRANCIS LEBARON JENNEY, M.D., Chicago, to Mrs. Winifred Ament-Morgen, of Indianapolis, Ind., in Chicago, August 21.

DEATHS.

WILLIAM H. BENTLEY, M.D., a Confederate veteran, died at his home in Marion, Ill., August 22.

ROBERT H. WESTFELD, M.D., Beaumont Hospital Medical College, St. Louis, 1888, died at his home in Chicago, August 19, aged 55.

JOSEPH T. PACE, M.D., Ohio Medical University, Columbus, 1878, died at his home in Carlyle, Ill., August 17, after a lingering illness,

from injuries received two years before from a fall down an elevator shaft, aged 62.

AMASA E. FIELD, M.D., Rush Medical College, Chicago, 1895, a member of the Illinois State and DuPage County Medical societies, died at his home in Warrenville, Ill., August 23, from tuberculosis, after an illness of more than two years, aged 48.

CHARLES W. SLY, M.D., Beaumont Hospital Medical College, St. Louis, 1892; Physio-Medical Institute, Chicago, 1888; a member of the Illinois State and Woodford County Medical societies, died suddenly at his home in Benson, Ill., August 16, from heart disease, aged 44.

CHRISTIAN E. BURKEHOLDER, M.D., Rush Medical College, Chicago, 1899, of Jacksonville, Ill., a member of the Illinois State and Morgan County Medical societies, died at Our Savior's Hospital, Jacksonville, July 28, two days after an operation for strangulated umbilical hernia, aged 31.

SAMUEL BANE, M.D., Northwestern University Medical School, Chicago, 1897, a member of the American Medical Association and one of the most promising young practitioners of Peoria, Ill., died at his home in that city in September from intestinal paralysis following typhoid fever, after an illness of two weeks, aged 36.

EDWARD W. LEE, M.D., L.R.C.P., Ireland, Dublin, 1862, a member of the Illinois State and Cook County and Chicago Medical societies, for many years a well-known surgeon of Chicago and for twenty years chief surgeon of the Pennsylvania lines west of Pittsburg, and attending surgeon of the Cook County Hospital and other institutions, died at his home in Chicago, August 11, aged 67.

JOHN NORMAN DIXON, M.D., College of Medicine and Surgery, Cincinnati, Ohio, 1873, of Springfield, Ill., died in St. Louis Sept. 8, 1907, after a short illness, aged 53. Soon after his graduation Dr. Dixon located in Springfield and entered into partnership with Dr. Rufus Lord. He remained in practice in Springfield until his death, a period of more than thirty years. He was connected with the Springfield Hospital and Training School, and at one time chief surgeon of the C., P. & St. L. Railroad and local surgeon of the Ohio & Mississippi, Chicago & Alton and Illinois Central railroads, and a member of the county and state medical societies and of the American Medical Association.

At a meeting of the Sangamon County Medical Society, held September 9, the society adjourned out of respect to the memory of Dr. Dixon and appointed a committee to prepare resolutions on his death, and the society resolved to attend his funeral.